

HCD-C7NT

SERVICE MANUAL

Ver. 1.1 2005.02



AEP Model
UK Model
E Model



HCD-C7NT is the Amplifier, CD player,
MD Deck and Tuner section in CMT-C7NT.

CD Section	Model Name Using Similar Mechanism	HCD-C5
	CD Mechanism Type	TN-CCD1001Z
	Base Unit Name	TT BASE ASSY
	Optical Pick-up Name	OPTIMA-720L1E
MD Section	Model Name Using Similar Mechanism	New
	MD Mechanism Type	MDM-7X2B
	Optical Pick-up Name	KMS-262E

SPECIFICATIONS

Amplifier section

European model:

DIN power output (rated): 15 + 15 W
(6 ohms at 1 kHz, DIN)

Continuous RMS power output (reference):
20 + 20 W
(6 ohms at 1 kHz, 10% THD)

Music power output (reference):
45 + 45 W

Other models:

The following measured at 220 V AC, 60 Hz
DIN power output (rated): 15 + 15 W
(6 ohms at 1 kHz, DIN)

Continuous RMS power output (reference):
20 + 20 W
(6 ohms at 1 kHz, 10% THD)

Inputs

TAPE IN (stereo minijack):
Sensitivity 250 mV,
impedance 47 kilohms

DIGITAL OPTICAL IN (Supported sampling
frequencies: 32 kHz, 44.1 kHz and 48 kHz)

Outputs

TAPE OUT (stereo minijack):
Sensitivity 250 mV,
impedance 1 kilohm

PHONES (stereo minijack):
Accepts headphones with
an impedance of 8 ohms
or more

CD player section

System Compact disc and digital
audio system
Laser Semiconductor laser
($\lambda = 780$ nm)
Emission
duration: continuous
2 Hz – 20 kHz

Frequency response

MD deck section

System MiniDisc digital audio
system
Laser Semiconductor laser
($\lambda = 780$ nm)
Emission duration:
continuous
44.1 kHz
Sampling frequency
Frequency response 5 Hz – 20 kHz

Tuner section

FM stereo, FM/AM superheterodyne tuner

FM tuner section

Tuning range 87.5 – 108.0 MHz
(50-kHz step)
Antenna FM wire antenna
Antenna terminals 75 ohm unbalanced
Intermediate frequency 10.7 MHz

AM tuner section

Tuning range 531 – 1,602 kHz
(with the tuning interval
set at 9 kHz)
European model: 530 – 1,710 kHz
(with the tuning interval
set at 10 kHz)
531 – 1,602 kHz
(with the tuning interval
set at 9 kHz)
Antenna AM loop antenna, external
antenna terminal
Intermediate frequency 450 kHz

Other models:

General

Power requirements
European model: 230 V AC, 50/60 Hz
Other models: 220 V AC, 50/60 Hz

Power consumption
European model: See the nameplate
0.5 W (at the power
saving mode)
Other models: See the nameplate

Dimensions (w/h/d) Approx. 145 × 125 ×
273 mm incl. projecting
parts and controls

Mass Approx. 4.5 kg

Supplied accessories Remote commander (1)
FM wire antenna (1)
AM loop antenna (1)
USB cable (1)
Operating Instructions (1)
M-crew for CMT-C7NT/
OpenMG Jukebox for Net
MD CD-ROM (1)
M-crew Operating
Instructions (1)
OpenMG Jukebox for Net
MD Operating
Instructions (1)
Warranty (1)

Design and specifications are subject to change
without notice.

MICRO HI-FI COMPONENT SYSTEM

9-873-685-02

2005B16-1

© 2005.02

Sony Corporation

Personal Audio Group

Published by Sony Engineering Corporation

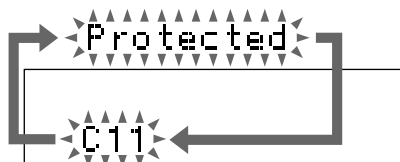
SONY®

SELF-DIAGNOSIS FUNCTION

The self-diagnosis function consists of error codes for customers, which are displayed automatically when errors occur, and error codes, which show the error history in the test mode during servicing. For details on how to view error codes for the customer, refer to the following box in the instruction manual. For details on how to check error codes during servicing, refer to the following “Procedure for using the Self-Diagnosis Function (Error History Display Mode)”.

Self-diagnosis display

This system has a Self-diagnosis display function to let you know if there is a system malfunction. The display shows a code made up of 3 or 5 letters and a message alternately to show you the problem. To solve the problem refer to the following list. If any problem persists, consult your nearest Sony dealer.



C11/Protected

The MD is protected against erasure.

- Remove the MD and slide the tab to close the slot (see page 19).

C12/Cannot Copy

You tried to record a CD or MD with a format that the system does not support, such as a CD-ROM.

- Remove the disc and turn off the system once, then turn it on again.

C13/REC Error

Recording could not be performed properly.

- Move the system to a stable place, and start recording over from the beginning.

The MD is dirty or scratched, or the MD does not meet the standards.

- Replace the MD and start recording over from the beginning.

C13/Read Error

The MD deck cannot read the disc information properly.

- Remove the MD once, then load it again.

C14/Toc Error

The MD deck cannot read the disc information properly.

- Replace the MD.

Erase all the recorded contents of the MD using All Erase Function (see page 35).

C41/Cannot Copy

The sound source is a copy of a commercially available music software, or you tried to record a CD-R (Recordable CD) or CD-RW (ReWritable CD).

- The Serial Copy Management System prevents making a digital copy (see page 57). You cannot record a CD-R or CD-RW.

C71/Check OPT-IN

This appears momentarily because of the signal of the digital broadcast during recording.

- There is no affect on the recorded contents.

No component is connected to the DIGITAL OPTICAL IN jack, or a digital component is not connected properly.

- Connect a digital component to the DIGITAL OPTICAL IN jack properly using a digital connecting cable (not supplied, see page 49).

The connected digital component is not turned on.

- See the operating instructions supplied with the connected component and confirm whether the component is turned on.

The digital connecting cable connected to the DIGITAL OPTICAL IN jack is pulled out, or the connected digital component is turned off during digital recording.

- Connect the cable, or turn on the digital component.

E0001/MEMORY NG

There is an error in the internal data that the system needs in order to operate.

- Consult your nearest Sony dealer.

E0101/LASER NG

There is a problem with the optical pickup.

- The optical pickup may have failed. Consult your nearest Sony dealer.

TABLE OF CONTENTS

SELF-DIAGNOSIS FUNCTION	2
1. SERVICING NOTES	4
2. GENERAL	7
3. DISASSEMBLY	9
4. TEST MODE	24
5. ELECTRICAL ADJUSTMENTS	
CD Section	33
MD Section	34
6. DIAGRAMS	
6-1. Note For Printed Wiring Boards and Schematic Diagrams	45
– Wave forms	45
– Circuit Boards Location	45
6-2. Block Diagram – CD Servo Section –	46
6-3. Block Diagram – MD Servo Section –	47
6-4. Block Diagram – Main Section –	48
6-5. Block Diagram – USB section –	49
6-6. Printed Wiring Boards – BD (CD) Board –	50
6-7. Schematic Diagram – BD (CD) Board –	51
6-8. Printed Wiring Boards – Connector Section –	52
6-9. Schematic Diagram – Connector Section –	53
6-10. Printed Wiring Board – BD (MD) Board –	54
6-11. Schematic Diagram – BD (MD) Board (1/2) –	55
6-12. Schematic Diagram – BD (MD) Board (2/2) –	56
6-13. Printed Wiring Board – MD DIGITAL Board –	57
6-14. Schematic Diagram – MD DIGITAL Board (1/3) –	58
6-15. Schematic Diagram – MD DIGITAL Board (2/3) –	59
6-16. Schematic Diagram – MD DIGITAL Board (3/3) –	60
6-17. Printed Wiring Board – UCOM Board –	61
6-18. Schematic Diagram – UCOM Board –	62
6-19. Printed Wiring Boards – Audio Section –	63
6-20. Schematic Diagram – Audio Section –	64
6-21. Printed Wiring Board – PANEL Board –	65
6-22. Schematic Diagram – PANEL Board –	66
6-23. Printed Wiring Boards – Power Section –	67
6-24. Schematic Diagram – Power Section –	68
6-25. IC Block Diagrams	69
6-26. IC Pin Function Description	74
7. EXPLODED VIEWS	82
8. ELECTRICAL PARTS LIST	92

SECTION 1
SERVICING NOTE

NOTES ON HANDLING THE OPTICAL PICK-UP
BLOCK OR BASE UNIT

The laser diode in the optical pick-up block may suffer electrostatic break-down because of the potential difference generated by the charged electrostatic load, etc. on clothing and the human body. During repair, pay attention to electrostatic break-down and also use the procedure in the printed matter which is included in the repair parts.
The flexible board is easily damaged and should be handled with care.

FOR CD

NOTES ON LASER DIODE EMISSION CHECK

The laser beam on this model is concentrated so as to be focused on the disc reflective surface by the objective lens in the optical pick-up block. Therefore, when checking the laser diode emission, observe from more than 30 cm away from the objective lens.

FOR MD

NOTES ON LASER DIODE EMISSION CHECK

Never look into the laser diode emission from right above when checking it for adjustment. It is feared that you will lose your sight.

Laser component in this product is capable of emitting radiation exceeding the limit for Class 1.



This appliance is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT MARKING is located on the bottom exterior.



This caution label is located inside the unit.

CAUTION
Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

Flexible Circuit Board Repairing

- Keep the temperature of soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

CAUTION

Danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type recommended by the manufacturer.
Discard used batteries according to the manufacturer's instructions.

ADVARSEL!
Lithiumbatteri-Eksplosionsfare ved fejlagtig håndtering.
Udskiftning må kun ske med batteri af samme fabrikat og type.
Levér det brugte batteri tilbage til leverandøren.

ADVARSEL

Ekspløsjonsfare ved feilaktig skifte av batteri.
Benytt samme batteritype eller en tilsvarende type anbefalt av apparatfabrikanten.
Brukte batterier kasseres i henhold til fabrikantens instruksjoner.

VARNING

Explosionsfara vid felaktigt batteribyte.
Använd samma batterityp eller en likvärdig typ som rekommenderas av apparattillverkaren.
Kassera använt batteri enligt gällande föreskrifter.

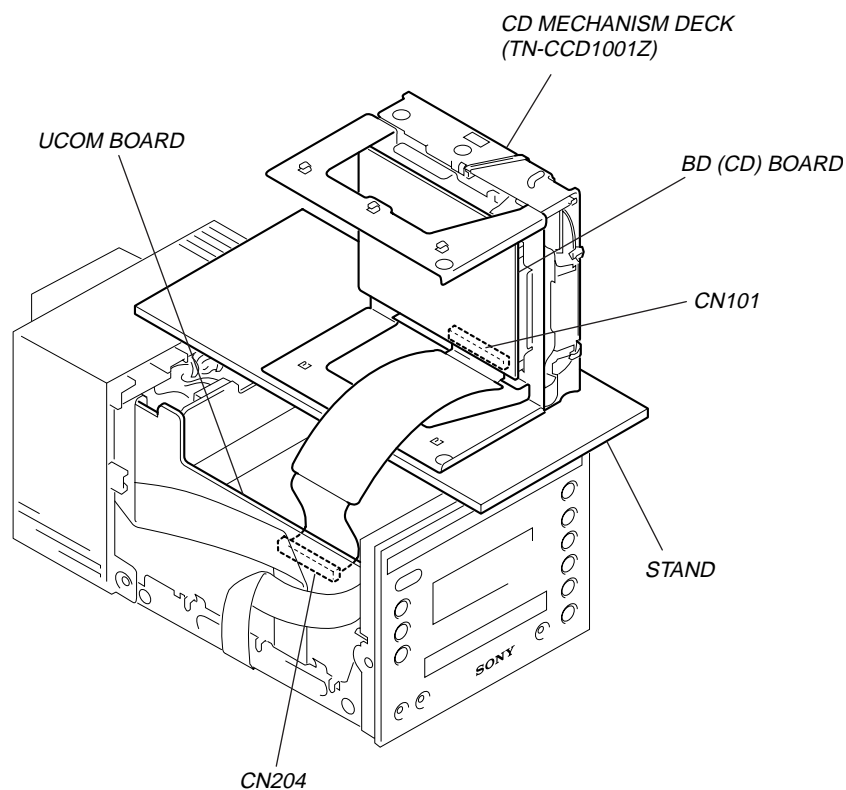
VAROITUS

Paristo voi räjähtää, jos se on virheellisesti asennettu.
Vaihda paristo ainoastaan laitevalmistajan suosittelemaan tyyppiin.
Hävitä käytetty paristo valmistajan ohjeiden mukaisesti.

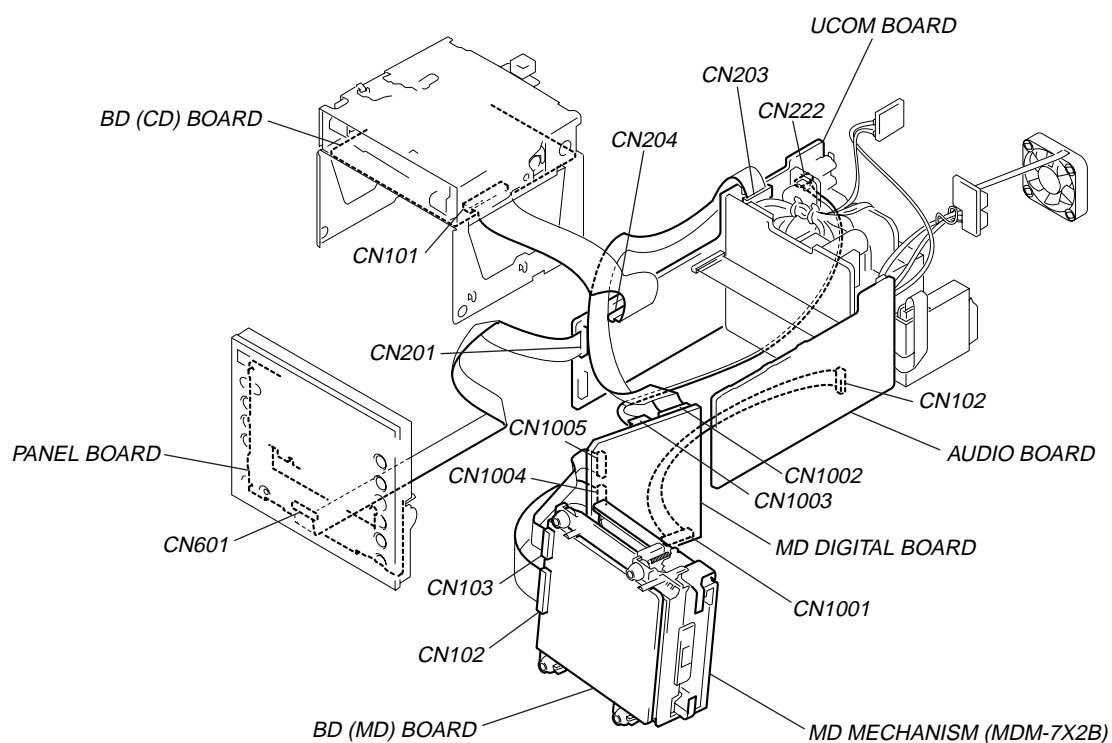
SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK OR DOTTED LINE WITH MARK ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICE POSITION OF THE CD MECHANISM DECK



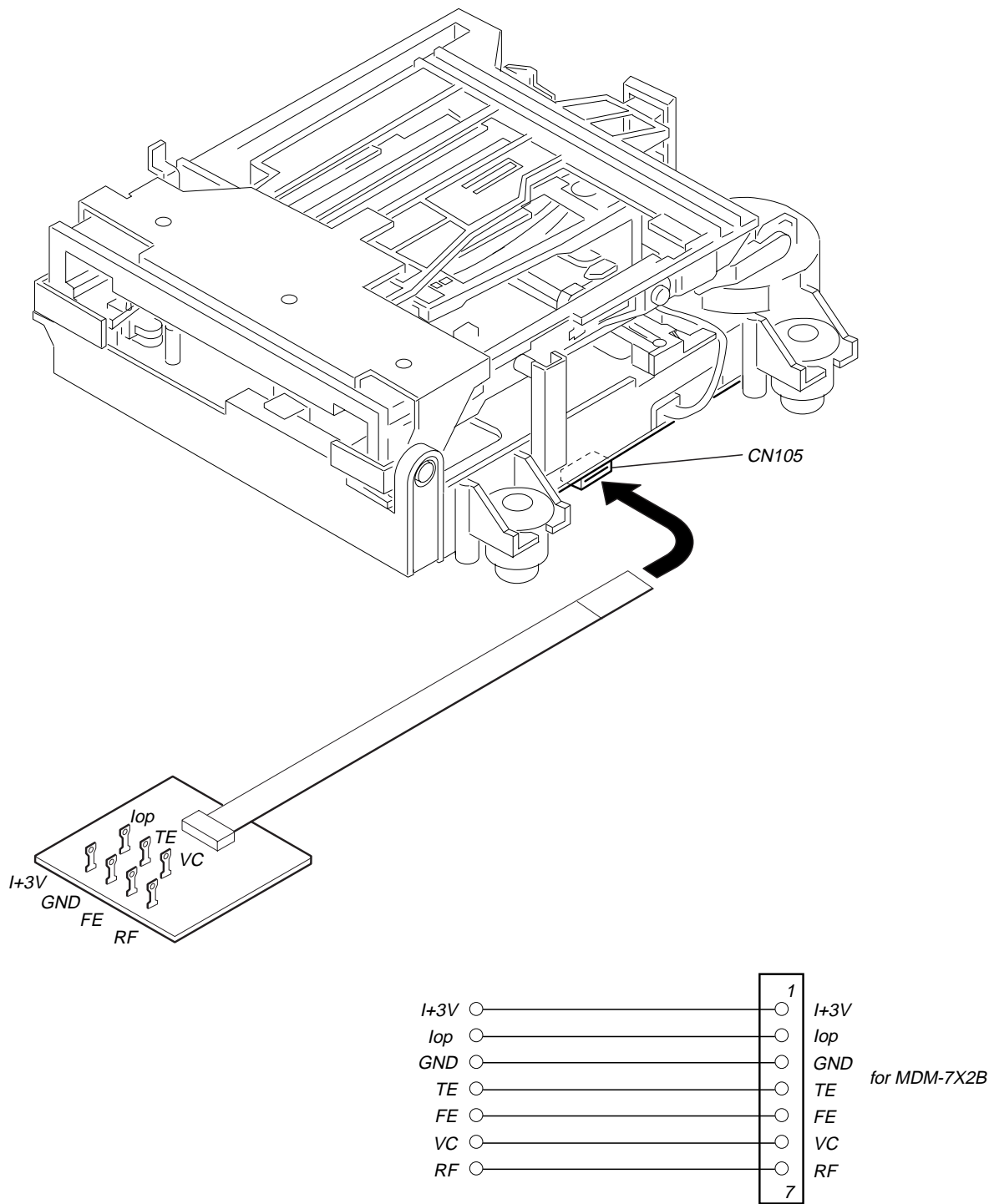
SERVICE POSITION OF THE MD MECHANISM DECK



JIG FOR CHECKING BD (MD) BOARD WAVEFORM

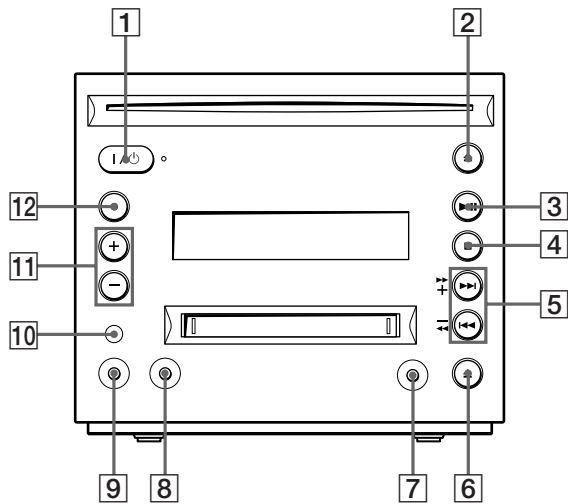
The special jig (J-2501-196-A) is useful for checking the waveform of the BD (MD) board. The names of terminals and the checking items to be performed are shown as follows.

- I+3V : For measuring Iop (Check the deterioration of the optical pick-up laser)
- Iop : For measuring Iop (Check the deterioration of the optical pick-up laser)
- GND : Ground
- TE : Tracking error signal (Traverse adjustment)
- FE : Focus error signal
- VC : Reference level for checking the signal
- RF : RF signal (Check jitter)



This section is extracted
from instruction manual.

Main unit

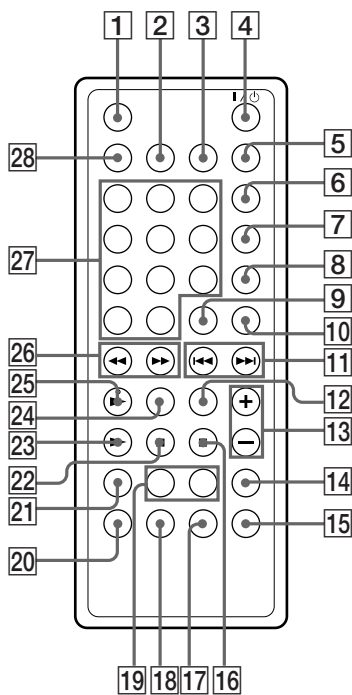


- CD SYNC HIGH [8] (19, 60)
CD SYNC NORMAL [9] (19)
CD ▲ [2] (10, 60)
FUNCTION [12] (9, 11, 13, 14, 16,
17, 19, 21–24, 26, 30–43, 50,
52)
MD ▲ [6] (15, 19, 29, 53)
NET MD [7] (53)
REC/REC IT [9] (20, 21, 25, 26,
28, 50, 60)
Remote sensor [10]
TUNING +/- [5] (42)
VOL +/- [11] (46)

BUTTON DESCRIPTIONS

- I/⏻ (power) [1] (7, 19, 29, 43, 46,
48, 53)
▶▶ [3] (9–11, 14–16, 19–21, 26,
28, 51)
■ [4] (10, 11, 15, 16, 20–22, 26,
28, 51)
◀◀▶▶ [5] (10, 11, 13, 15–17,
22–26, 30–41, 46–48)
◀◀▶▶ [5] (10, 15, 36)

Remote control



CD ■ 16 (10, 11)
CD II 22 (10)
CD ► 23 (9, 11, 21)
CLEAR 9 (11, 13, 16, 30, 44)
CLOCK/TIMER SELECT 6 (47, 48)
CLOCK/TIMER SET 7 (8, 46, 47)
CURSOR ←/→ 26 (8, 13, 30)
DBFB 14 (45)
DISPLAY 28 (8, 12, 17, 44)
ENTER/YES 8 (8, 11, 13, 14, 16, 21–26, 29–42, 44, 46, 47)
FM MODE 17 (43)
FUNCTION 20 (9, 11, 13, 14, 16, 17, 19, 21–24, 26, 30–43, 50, 52)
GROUP ON/OFF 24 (17, 27, 28, 30–34)
GROUP SKIP 12 (17, 28, 31–33)
Letter/Number buttons 27 (10, 13, 15, 30, 43)

MD ■ 16 (15, 16, 20–22, 26, 28, 51)
MD II 22 (15, 26)
MD ► 25 (14, 16, 17, 19, 20)
MENU/NO 10 (13, 14, 22–26, 29, 31–42)
NAME EDIT/SELECT 3 (13, 29–31, 44)
PLAY MODE 18 (9, 11, 13, 14, 16, 29, 40, 41)
PRESET EQ 15 (45)
REPEAT 17 (10, 15)
SCROLL 5 (12, 14, 18, 31)
SLEEP 1 (45)
TIME 2 (8, 11, 12, 16, 17)
TUNER BAND 21 (42, 43)
TUNING MODE 18 (42, 43)
TUNING +/- 19 (42, 43)
VOL +/- 13 (46)

BUTTON DESCRIPTIONS

I/⏻ (power) 4 (7, 19, 29, 43, 46, 48, 53)
◀▶▶▶ 11 (8, 10, 11, 13–17, 22–26, 30–41, 46–48)
-/+ 11 (8, 46, 48)
◀▶▶▶ 26 (10, 15, 36, 38)

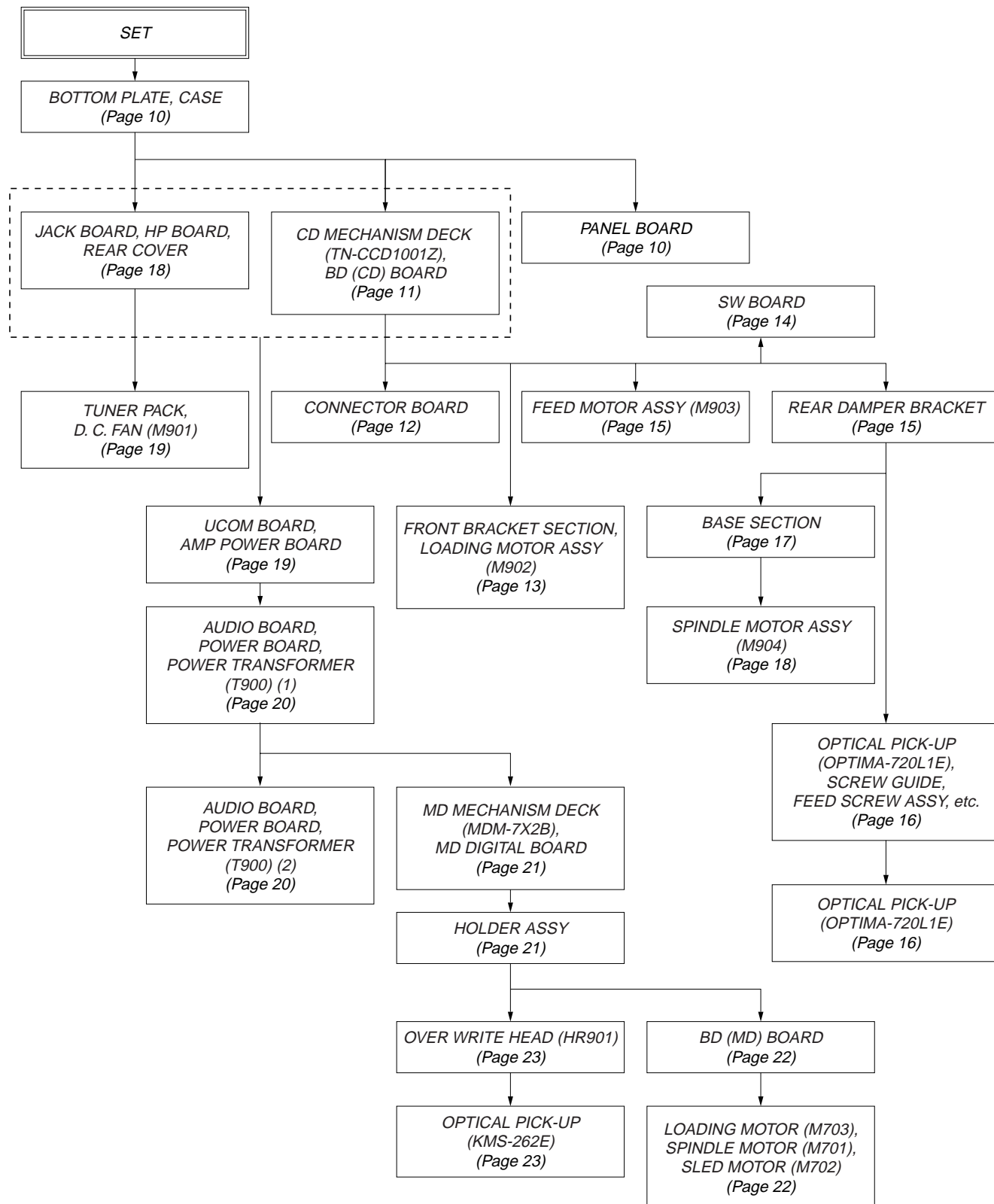
Setting the time

- 1 Turn on the system.
- 2 Press **CLOCK/TIMER SET** on the remote.
If you are setting the clock for the first time, go to step 5.
- 3 Press **–** or **+** (◀▶▶▶ or ▶▶▶) on the remote repeatedly until “**CLOCK SET?**” appears in the display.
- 4 Press **ENTER/YES** on the remote.
The day indication flashes.
- 5 Press **–** or **+** (◀▶▶▶ or ▶▶▶) on the remote repeatedly to set the day, and then press **ENTER/YES** or **CURSOR→** on the remote.
The hour indication flashes.

- 6 Press **–** or **+** (◀▶▶▶ or ▶▶▶) on the remote to set the hour, and then press **ENTER/YES** or **CURSOR→** on the remote.
The minute indication flashes.
- 7 Press **–** or **+** (◀▶▶▶ or ▶▶▶) on the remote repeatedly to set the minute, and then press **ENTER/YES** on the remote.
If you made a mistake
Press **←**—CURSOR or **CURSOR→** on the remote until the indication you wish to change (day, hour, minute) flashes, and then change the setting.
To reset the time
Start over from step 1.

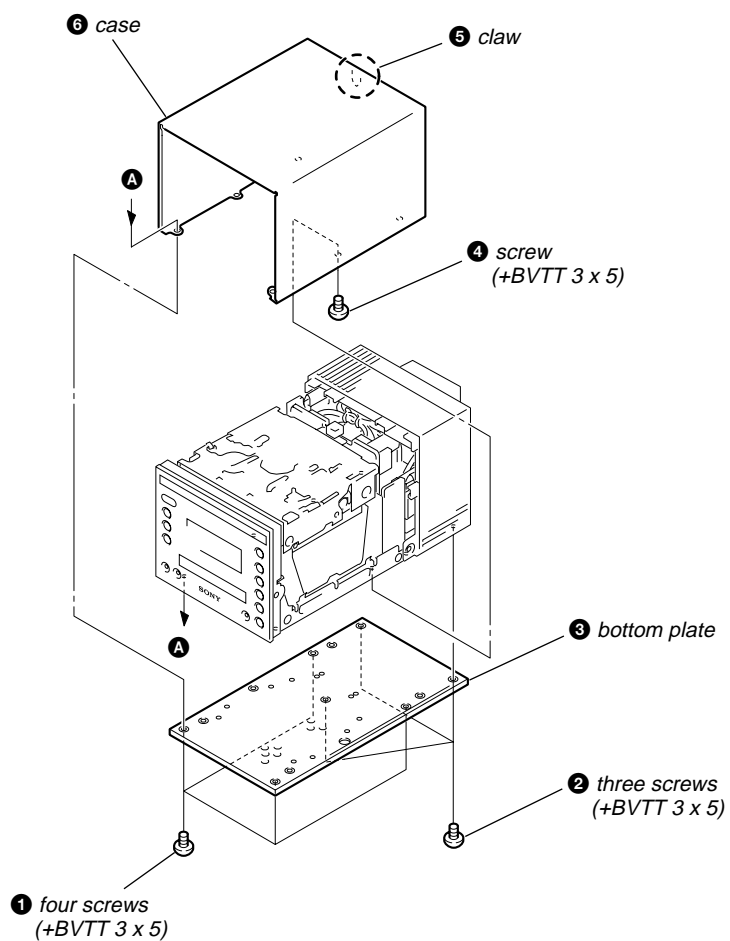
SECTION 3 DISASSEMBLY

- This set can be disassembled in the order shown below.
- The dotted square with arrow ([] →) prompts you to move to the next job when all of the works within the dotted square ([]) are completed.

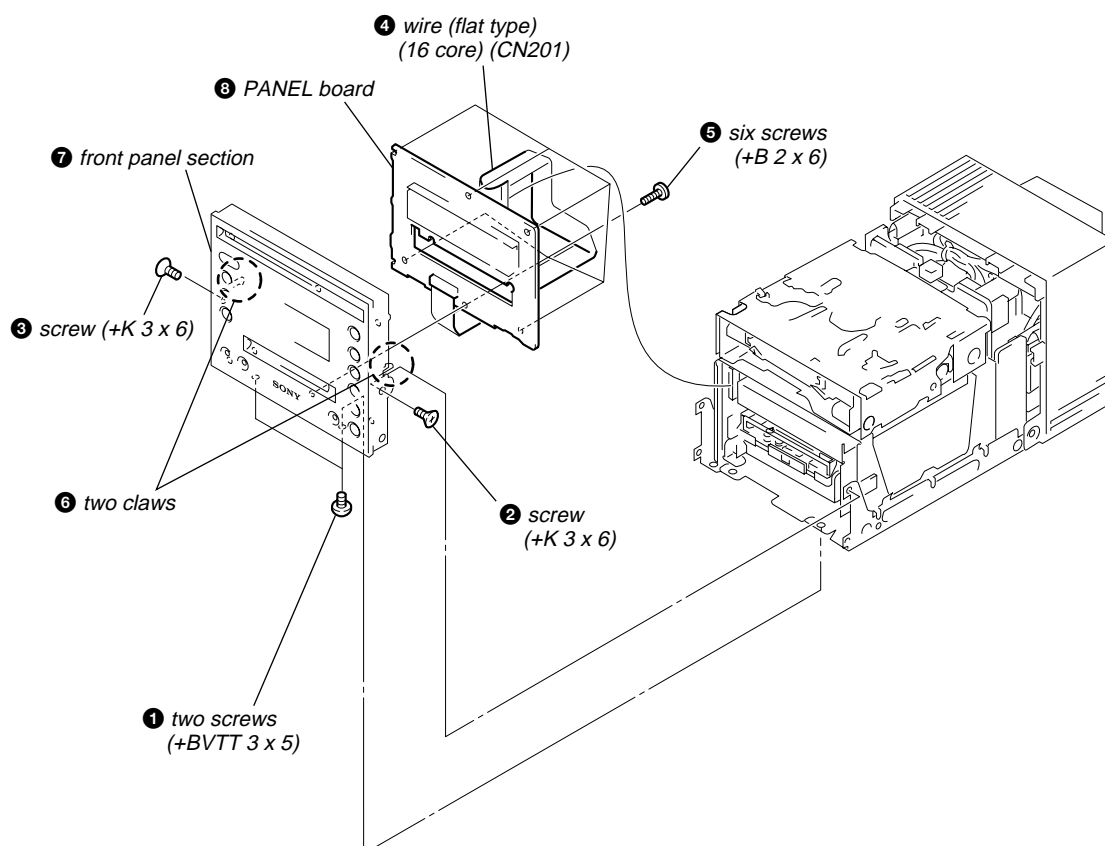


Note: Follow the disassembly procedure in the numerical order given.

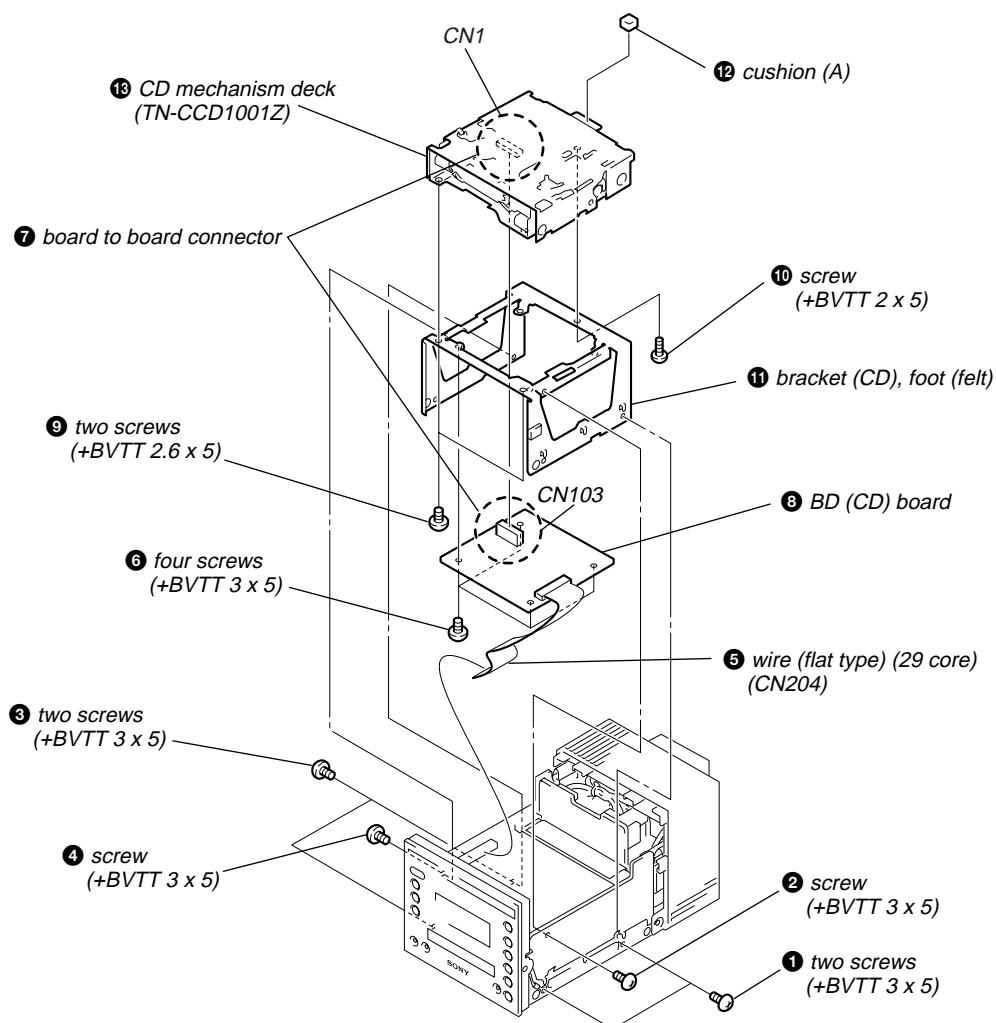
3-1. Bottom Plate, Case



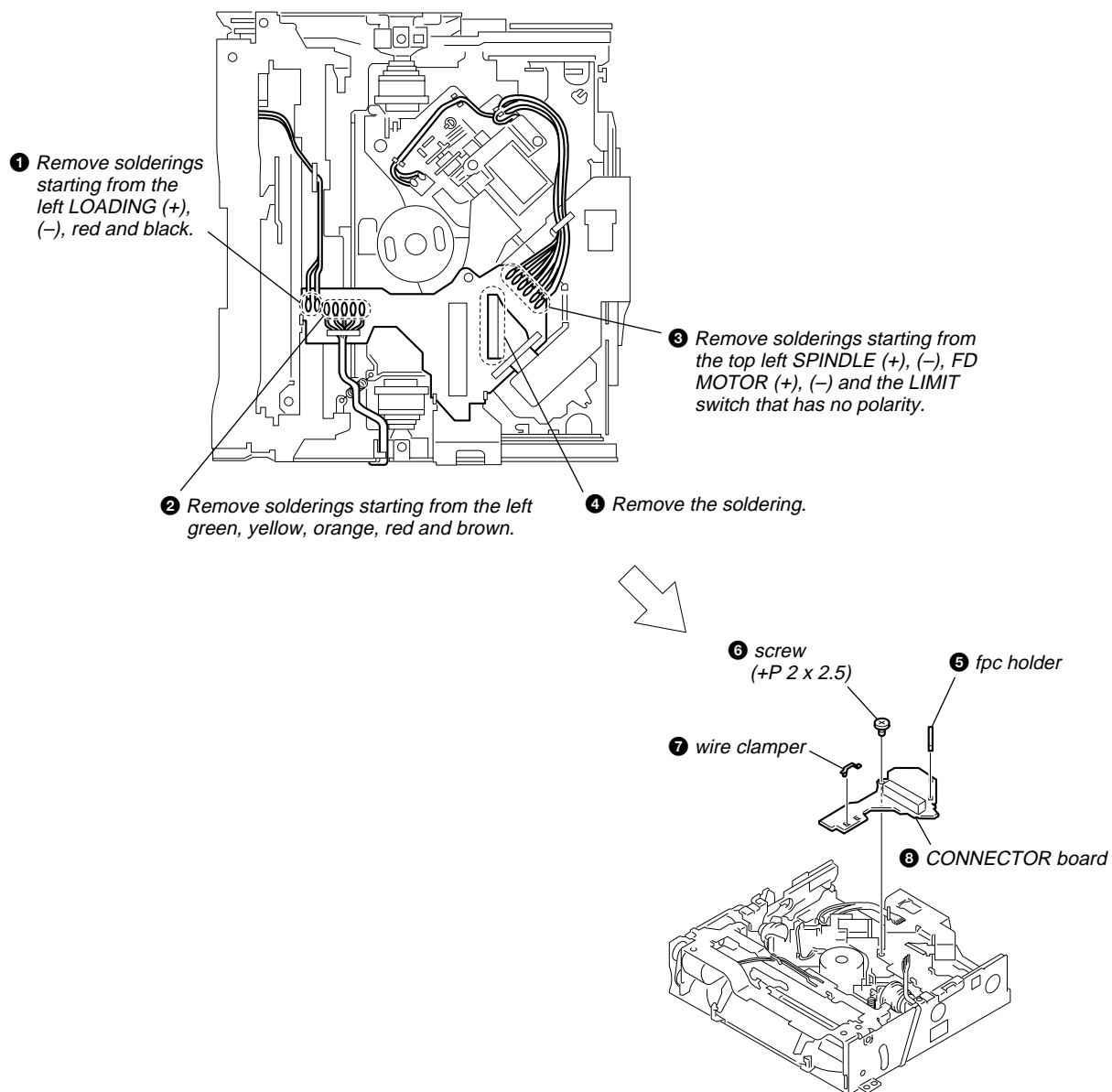
3-2. Panel Board



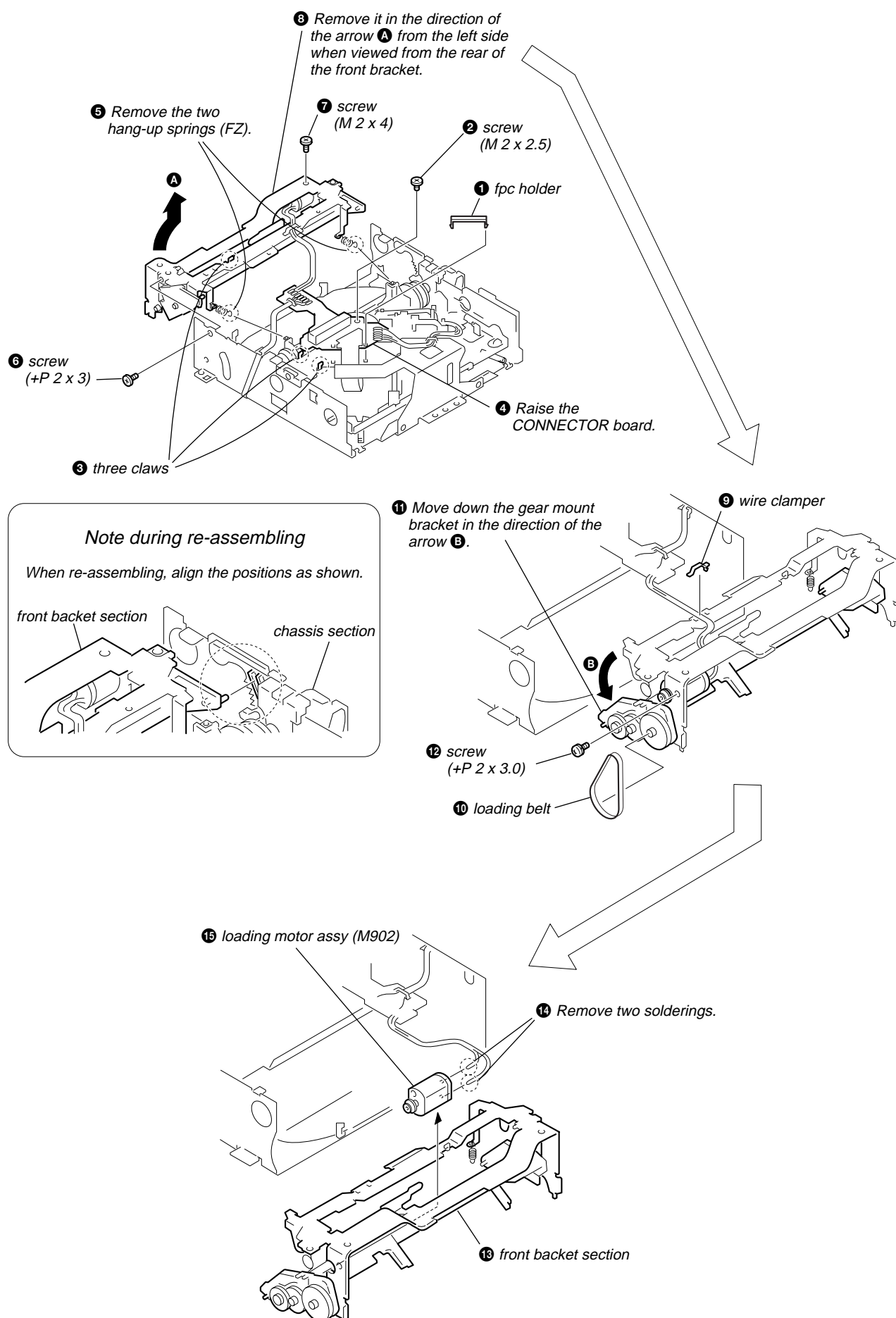
3-3. CD Mechanism Deck (TN-CCD1001Z), BD (CD) Board



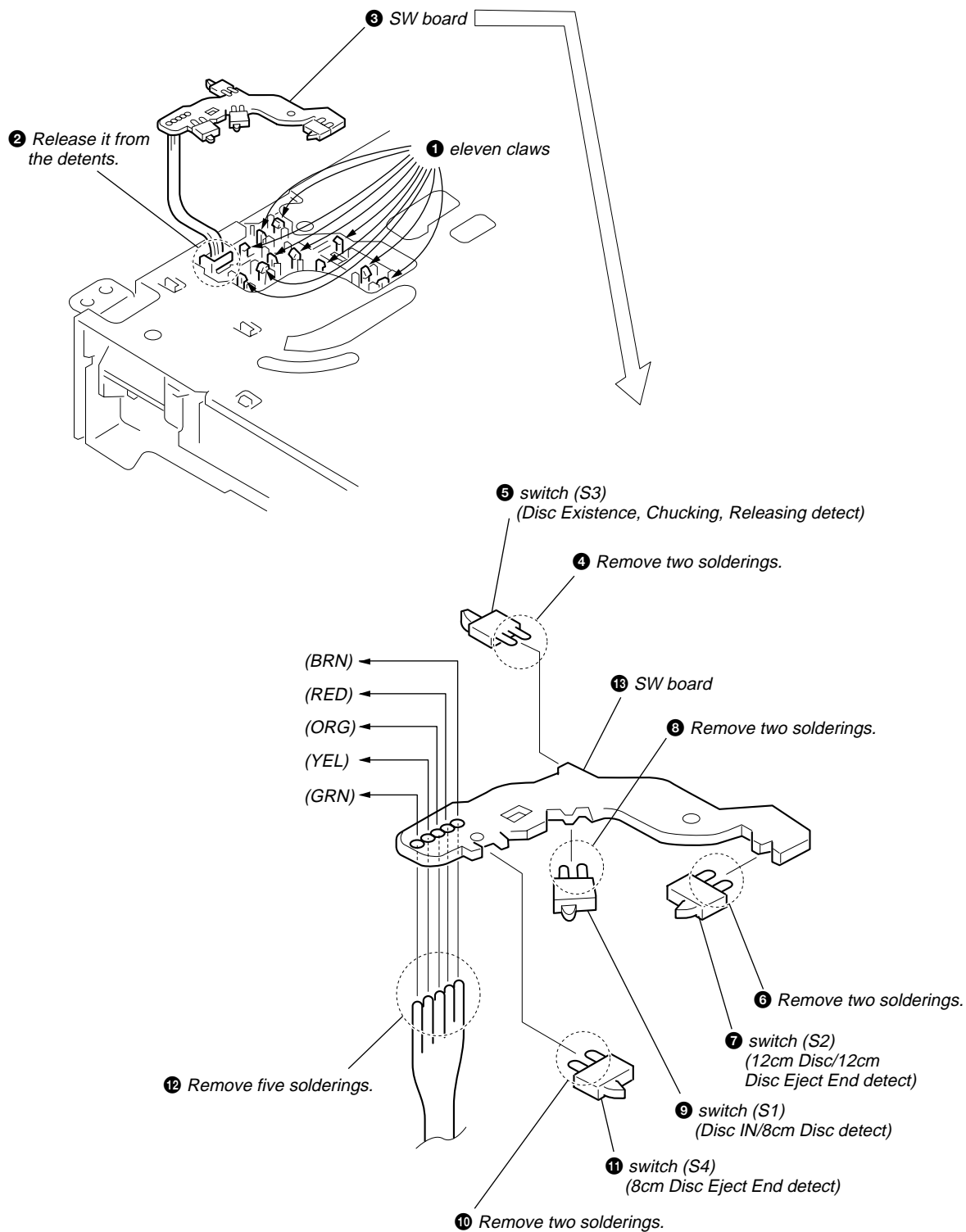
3-4. CONNECTOR Board



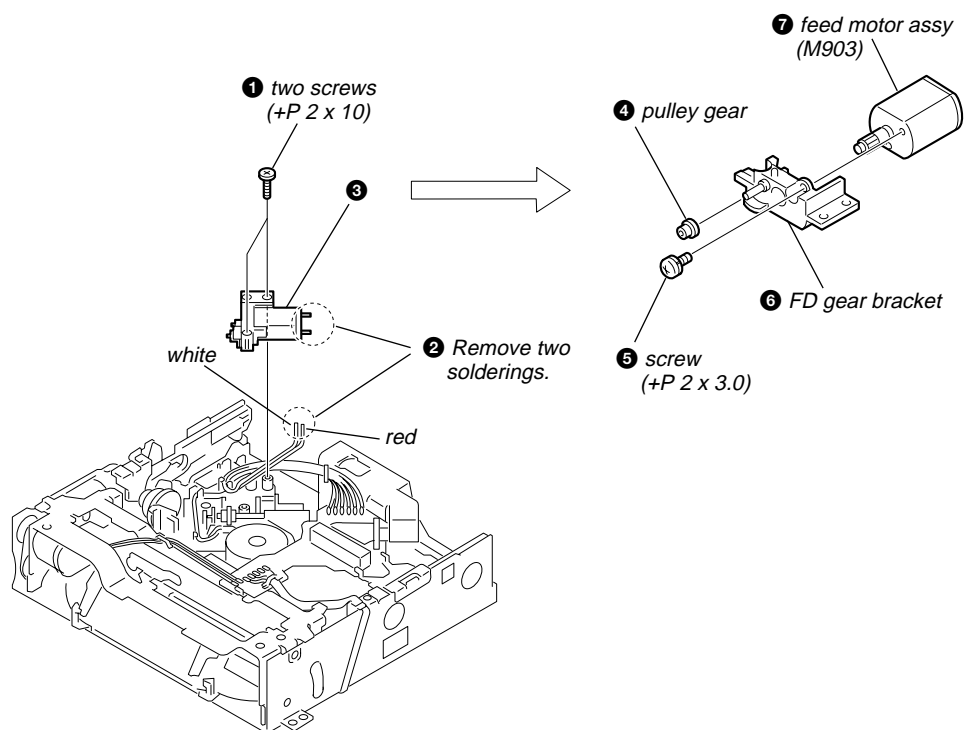
3-5. Front Bracket Section, Loading Motor Assy (M902)



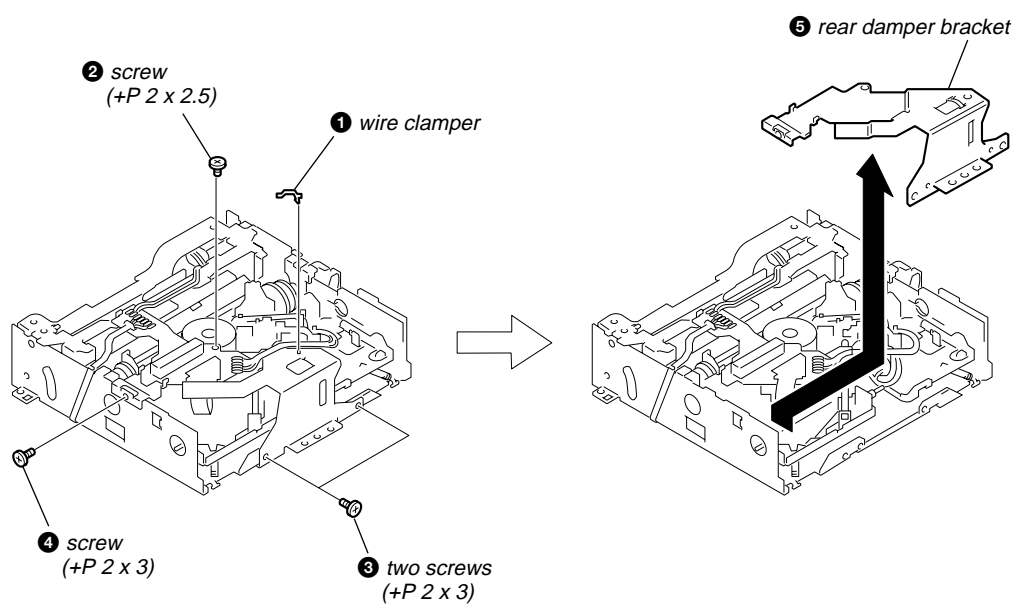
3-6. SW Board



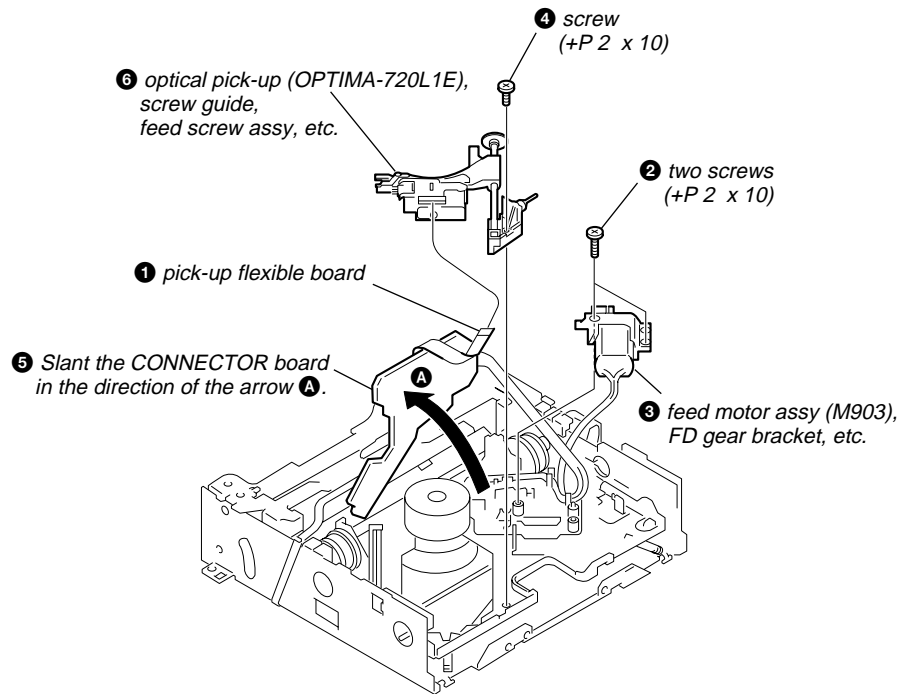
3-7. Feed Motor Assy (M903)



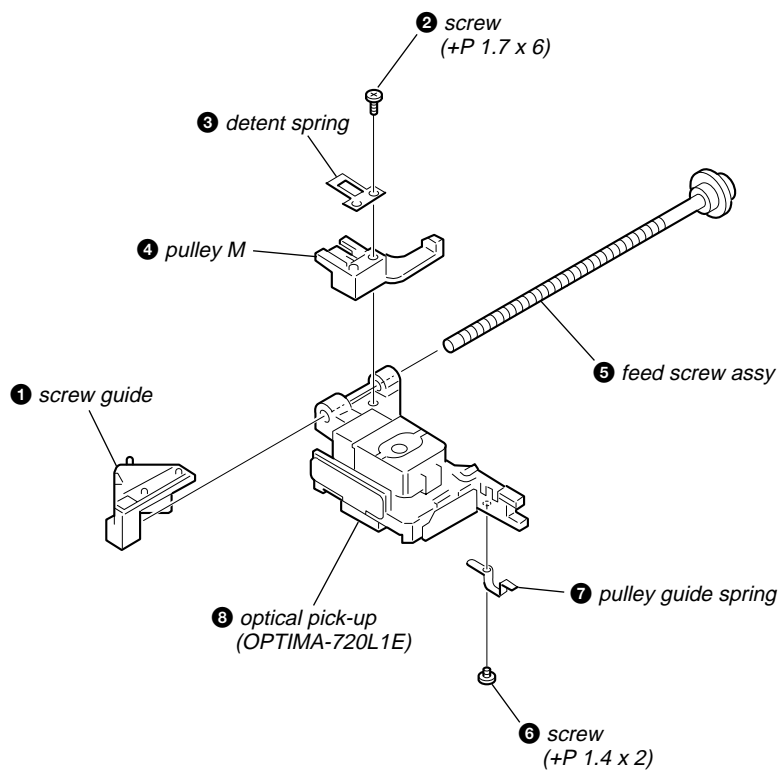
3-8. Rear Damper Bracket



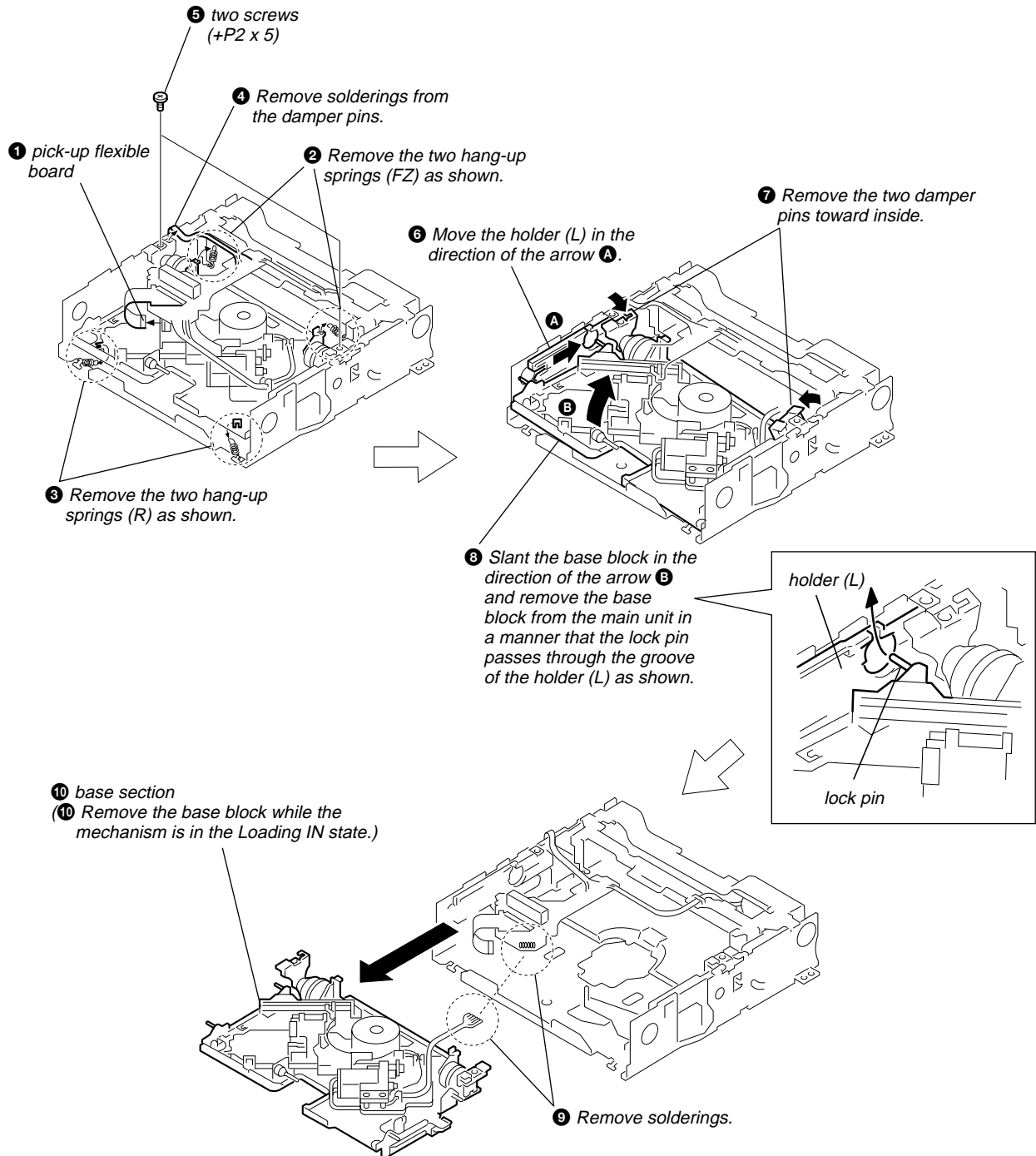
3-9. Optical Pick-up (OPTIMA-720L1E), Screw Guide, Feed Screw Assy, etc.



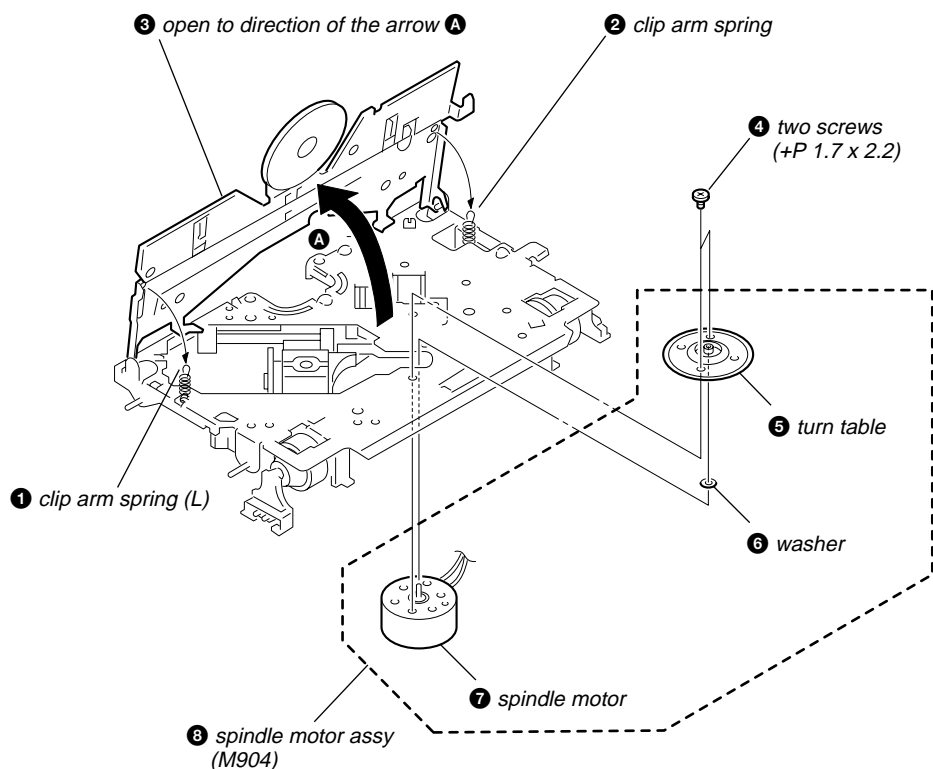
3-10. Optical Pick-up (OPTIMA-720L1E)



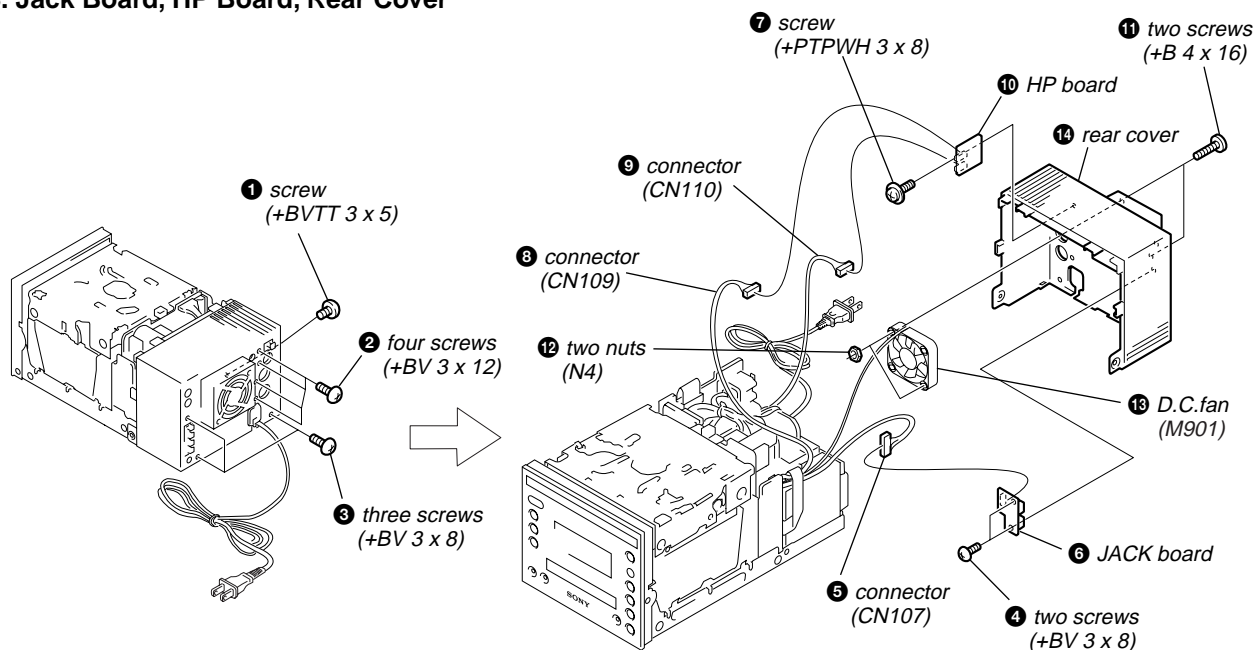
3-11. Base Section



3-12. Spindle Motor Assy (M904)



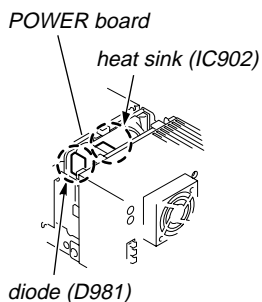
3-13. Jack Board, HP Board, Rear Cover



Note for re-installation-1

When installing the rear cover, be careful that the three harnesses coming from

"5 Connector (CN107)",
 "8 Connector (CN109)",
 "9 Connector (CN110)",
 and the harness coming from the DC fan (M901) must not contact the heat sink (IC902) and the diode (D981) and the heat sink (IC904).



Note for re-installation-2

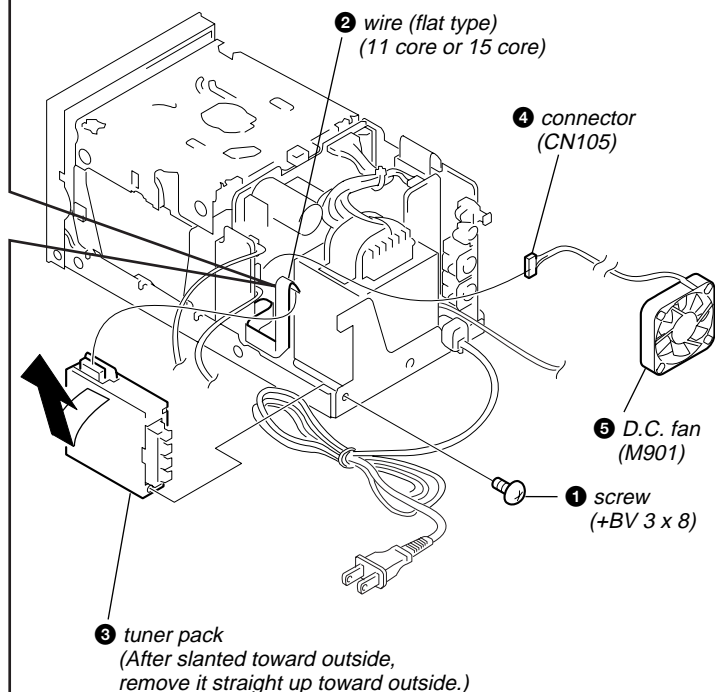
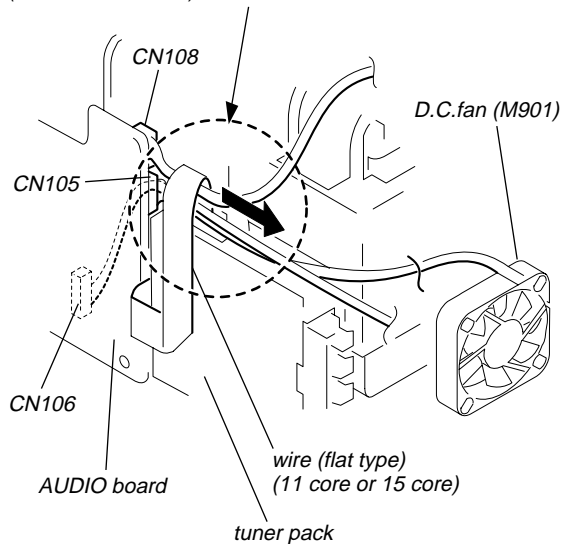
When installing the rear cover, be careful that the three harnesses coming from

"5 Connector (CN107)",
 "8 Connector (CN109)",
 "9 Connector (CN110)",
 and the harness coming from the D.C. fan (M901) must not be pinched by the rear cover, the UCOM board, power transformer (T900) and tuner pack.

3-14. Tuner Pack, D. C. Fan (M901)

Note for re-installation

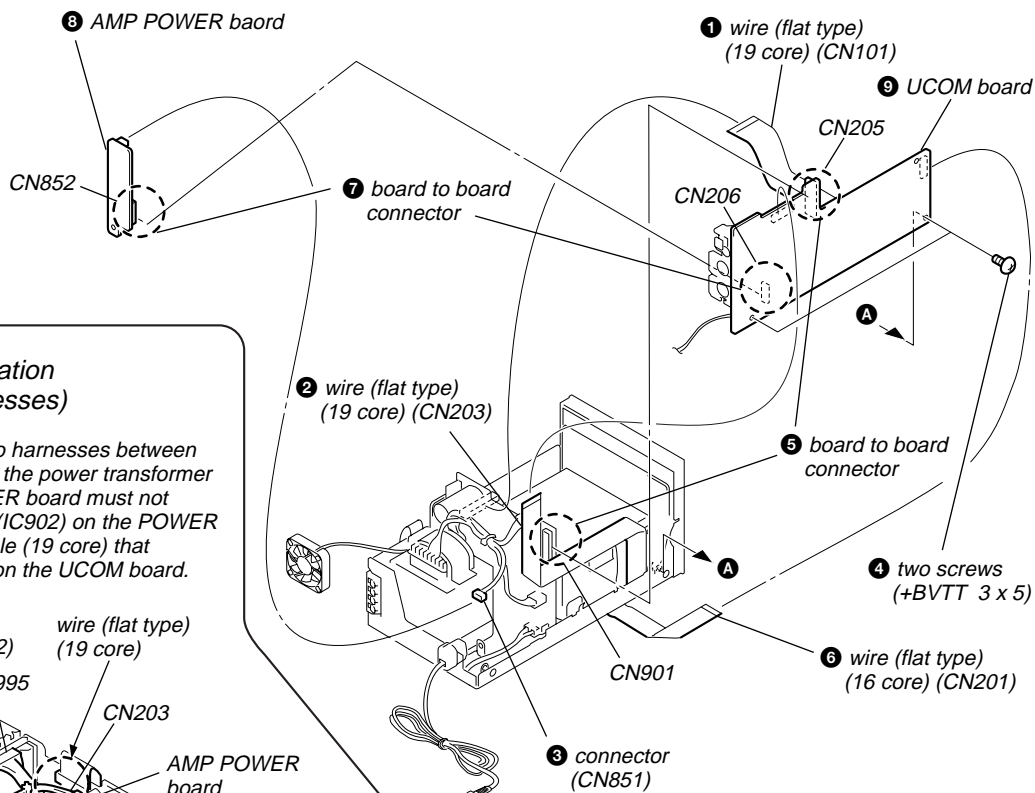
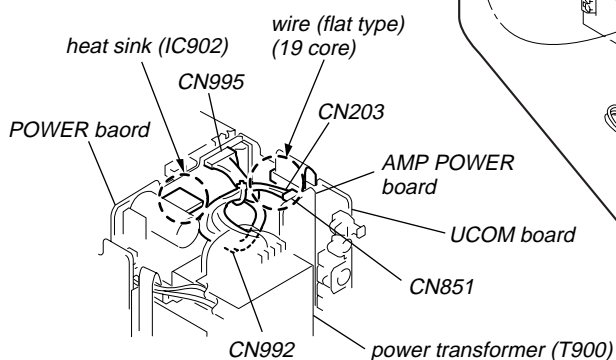
When installing the tuner pack, insert the three harnesses connected to CN105 and connected to CN106 and connected to CN108 of the AUDIO board, in between the flat cable (11 core or 15 core) and the tuner pack in the direction of the arrow so that the flat cable (11 core or 15 core) must be inserted.



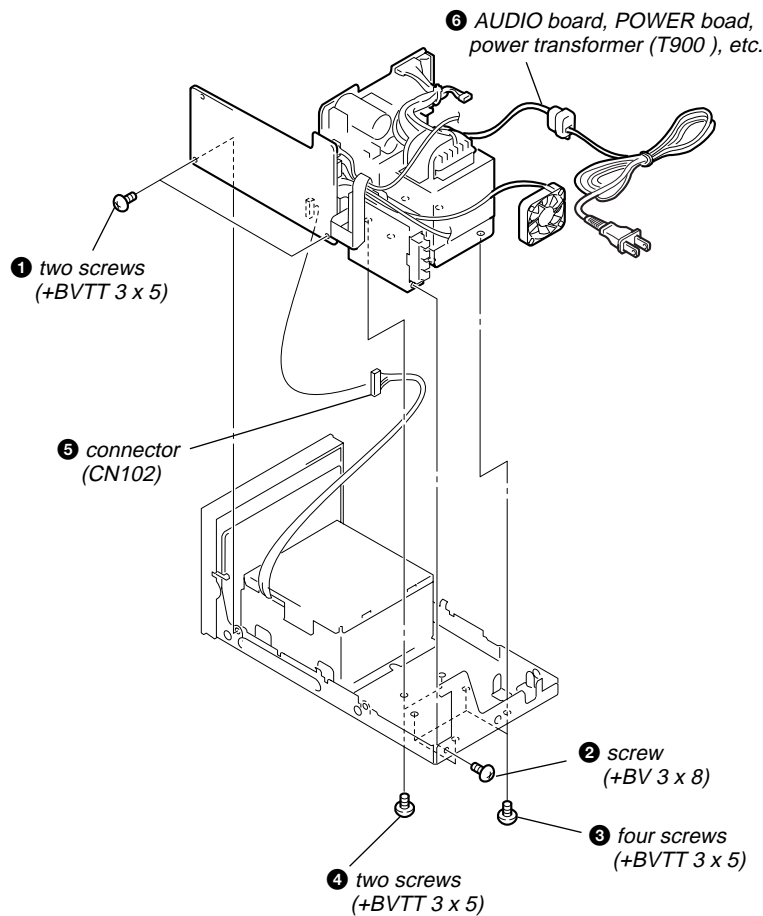
3-15. UCOM Board, AMP POWER Board

Note for re-installation (routing the harnesses)

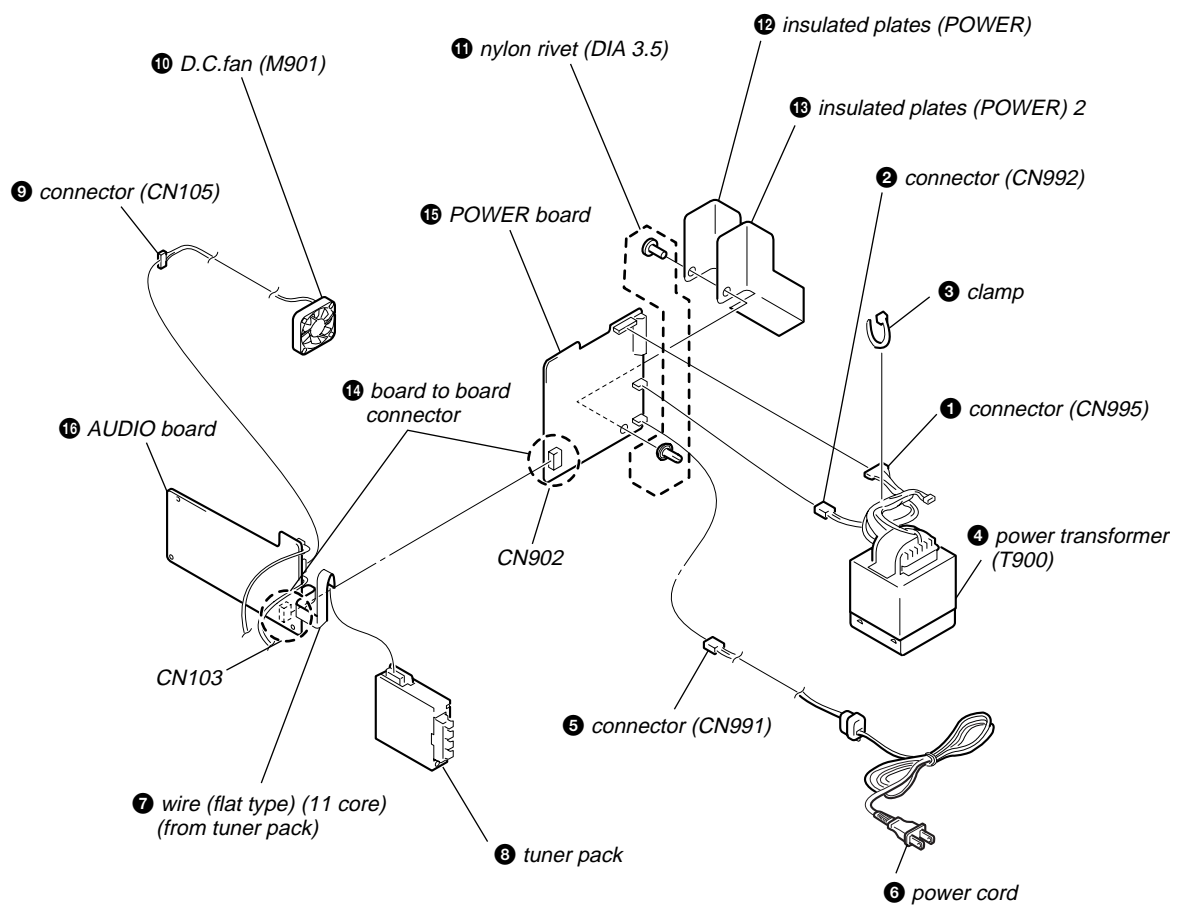
Be careful that the two harnesses between CN995 and CN992 of the power transformer (T900) and the POWER board must not contact the heat sink (IC902) on the POWER board and the flat cable (19 core) that is inserted to CN203 on the UCOM board.



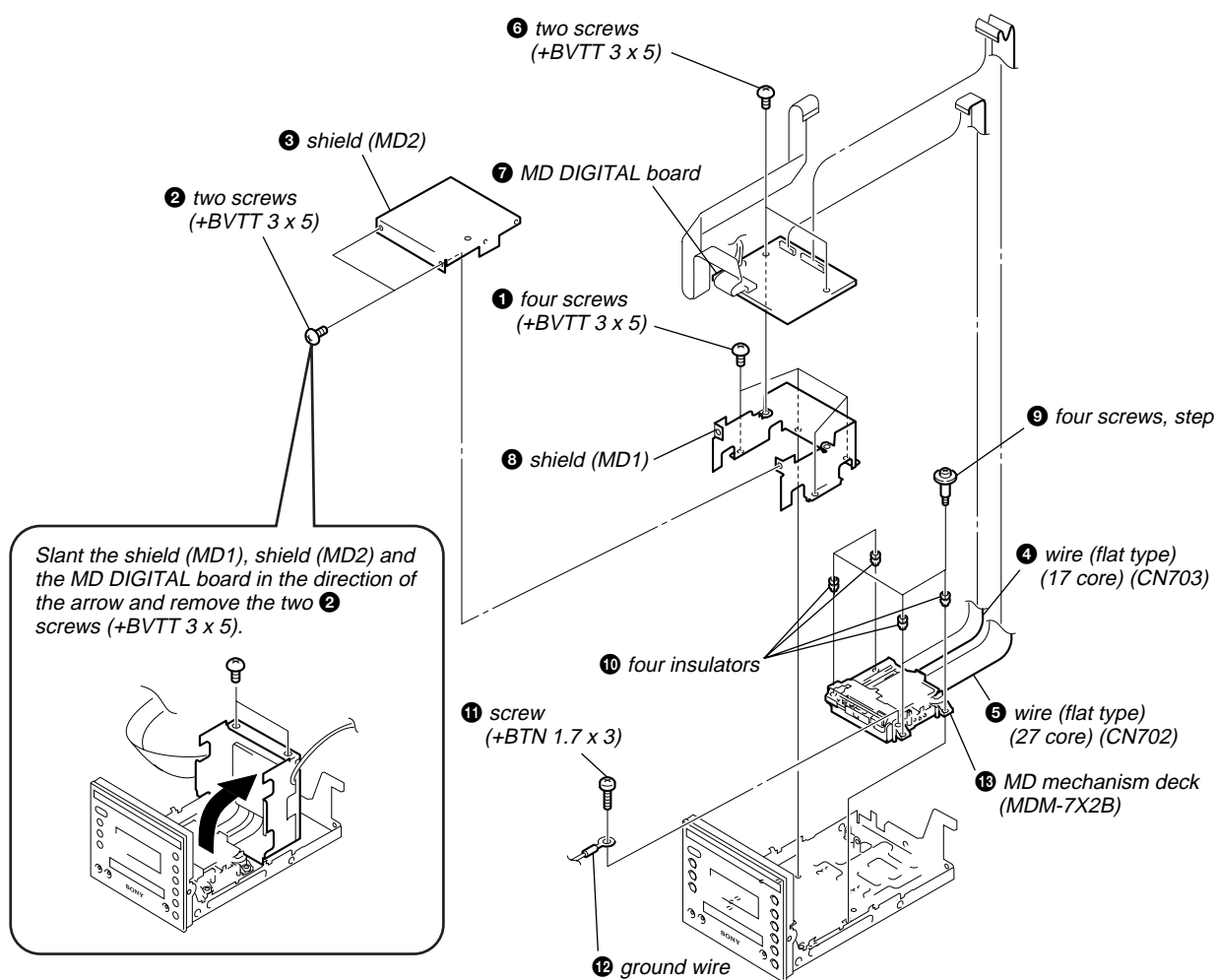
3-16. AUDIO Board, POWER Board, Power Transformer (T900) (1)



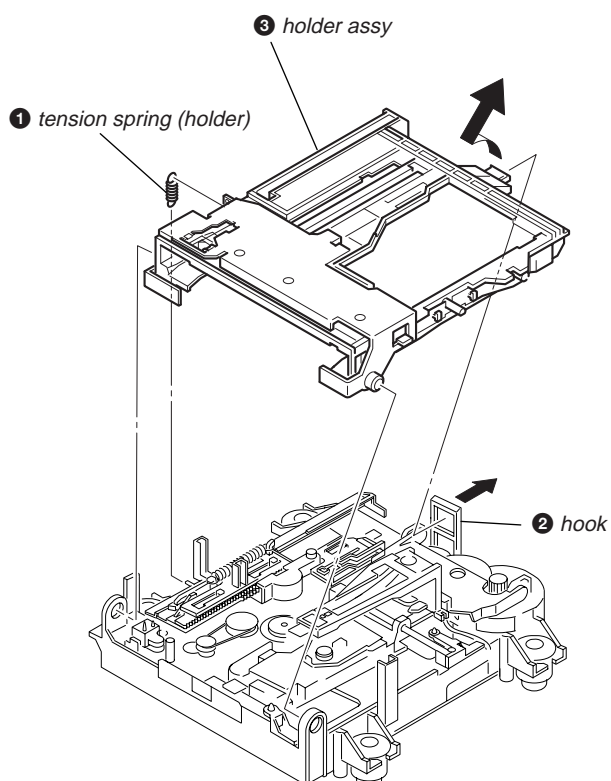
3-17. AUDIO Board, POWER Board, Power Transformer (T900) (2)



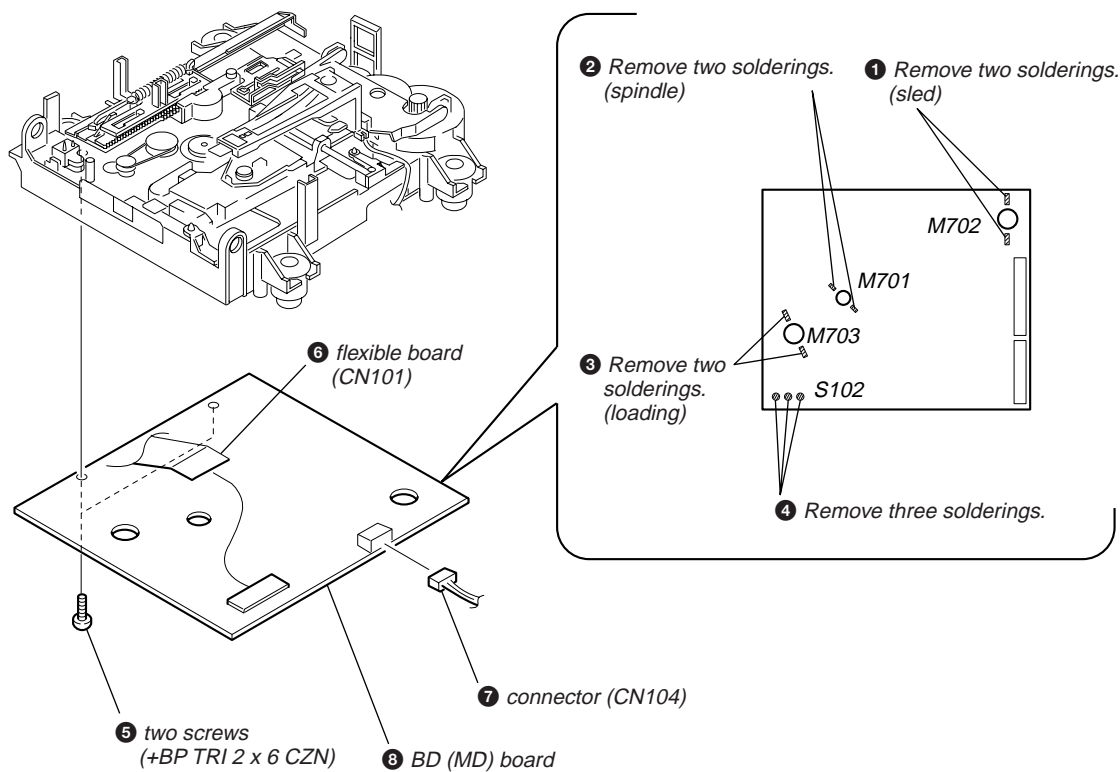
3-18. MD Mechanism Deck (MDM-7X2B), MD DIGITAL Board



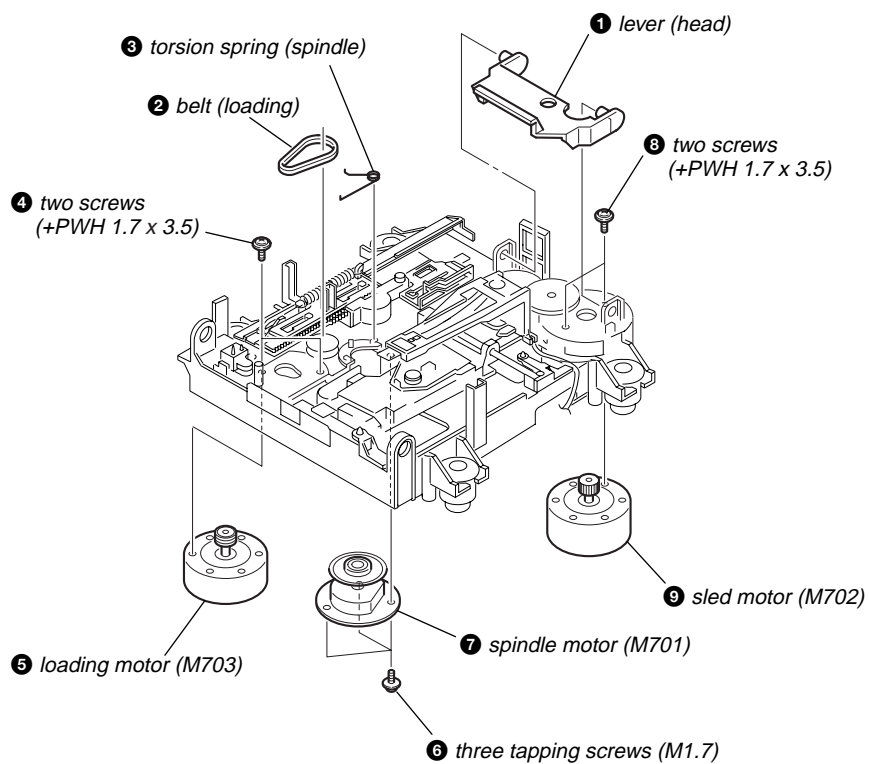
3-19. Holder Assy



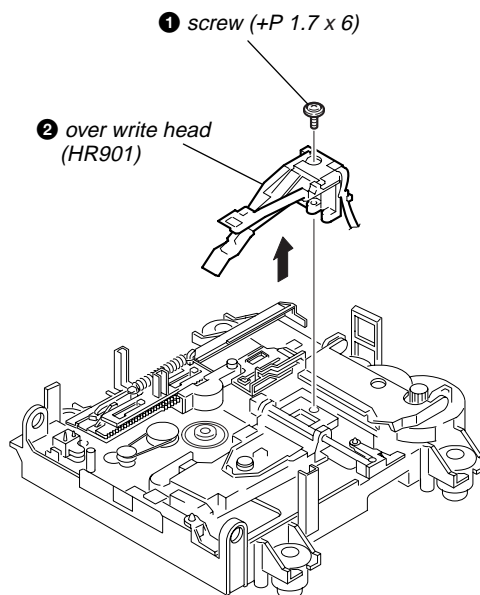
3-20. BD (MD) Board



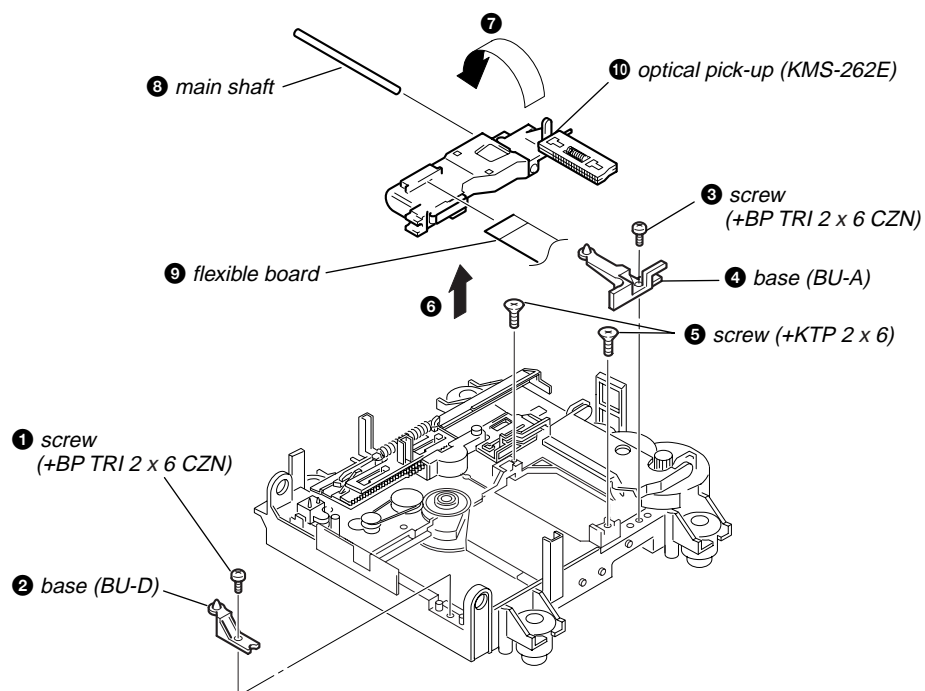
3-21. Loading Motor (M703), Spindle Motor (M701), Sled Motor (M702)



3-22. Over Write Head (HR901)



3-23. Optical Pick-Up (KMS-262E)



SECTION 4 TEST MODE

[Factory Preset Mode]

- * This mode clears all data including preset data stored in the RAM to initial conditions. Execute this mode when returning the set to the customer.

Procedure:

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function. (except the TUNER function)
3. Press three buttons **VOL +**, **CD** and **MD** simultaneously.
4. The message "COLD RESET" blinks and the present contents are reset to the default values.

[Version and Destination Display Mode]

- * The version or destination is displayed.

Procedure:

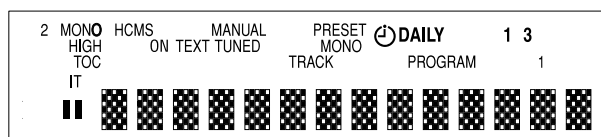
1. Press the **I/O** button to turn the power on.
2. To enter the test mode, press the three buttons **VOL +**, **■** and **MD** simultaneously.
3. The model and destination are displayed.
4. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously.
5. The version is displayed as "STR/CD V 0.00".
6. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously.
7. The version is displayed as "MD V 0.00".
8. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously, then the mode returns to step 3.
9. To exit from this mode, press the **I/O** button to turn the power off.

[FL Tube Test Mode]

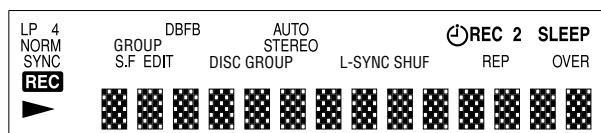
- * All fluorescent segments and LEDs are tested.

Procedure:

1. Press the **I/O** button to turn the power on.
2. To enter the test mode, press three buttons **VOL +**, **■** and **◀◀/◀◀ TUNING -** simultaneously.
3. All segments and LEDs are turned on.
4. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously.
5. All segments are turned off (All LEDs still lit).
6. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously.
7. Almost half segments are turned on. (PATTERN 1)



8. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously.
9. The segments which are turned on in step 7 are turned off, then remaining segments are turned on. (PATTERN 2)



10. Press the **REC/REC IT/NORMAL** and **▶||** buttons simultaneously, the mode returns to step 3 and all segments are turned on.
11. To exit from this mode, press the **I/O** button to turn the power off.

[Key Test Mode]

- * Keyboard check.

Procedure:

1. Press the **I/O** button to turn the power on.
2. To enter the test mode, press three buttons **VOL +**, **■** and **▶▶/▶▶ TUNING +** simultaneously.
3. In the key test mode, the fluorescent indicator displays "KEY00".
4. Each time a button is pressed, "KEY 00" value increases. However, once a button is pressed, it is no longer taken into account.
5. To exit from this mode, press three buttons simultaneously as step 2, or disconnect the power cord.

[Amp Test Mode]

Procedure:

1. Press the **I/O** button to turn the power on.
2. Press three buttons **VOL -**, **CD** and **MD** simultaneously.
3. Press two buttons **REC/REC IT/NORMAL** and **■** simultaneously.
4. The message "7 [TESTMIN]" is displayed for a few seconds.
5. Press two buttons **REC/REC IT/NORMAL** and **■** simultaneously again.
6. Each time two buttons are depressed, the display changes as "8 [TESTMID]", "9 [TESTMAX]", and "10 [TESTSUR]".
7. Press the **VOL +** button, the display changes "VOLUME 21" to "VOLUME MAX".
8. Press the **VOL -** button, the display changes "VOLUME 21" to "VOLUME MIN".
9. To exit from this mode, press the **I/O** button to turn the power off and cold reset is executed.

[CD Test Mode]

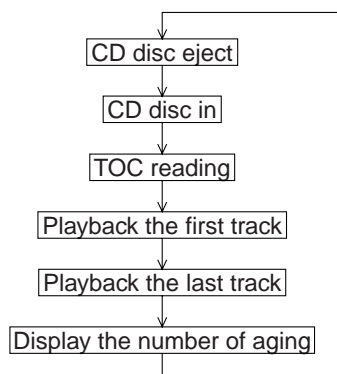
- * The CD system versions are displayed.

Procedure:

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function.
3. Press three buttons of **VOL +**, **■** and **CD SYNC HIGH** simultaneously.
4. The message "dut CD VER" is displayed.
5. Press the **CD** button and the version "CD 0.00" is displayed.
6. Press the **▶▶/▶▶ TUNING +** button and "CDSYS0000" is displayed.
7. Each time the **▶▶/▶▶ TUNING +** button is depressed, the display changes as "CDMA S", "CDBDU", "CDBDL", "CDMU", "CDML".
8. By depressing the **◀◀/◀◀ TUNING -** button the versions are displayed in reverse.
9. To exit this mode, press the **I/O** button to turn the power off.

[CD Aging Mode]**Procedure:**

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function, and insert a disc.
3. Press three buttons of **VOL -**, **CD** and **▶▶/▶▶ TUNING +** simultaneously.
4. The message "Eject" is displayed, a disc is ejected and inserted again automatically.
5. The sequence during the CD aging mode is following as below.

CD aging mode sequence:

6. To exit this mode, press the **I/O** button to turn the power off.

[CD/MD Aging Mode]

* Aging of CD and MD is performed at the same time.

Procedure:

1. Press the **I/O** button to turn the power on.
2. Press the **FUNCTION** button to set the CD function.
3. Insert a disc (CD) and a recordable disc (MD).
4. Press three buttons of **VOL +**, **▶▶** and **MD** simultaneously.
5. The message "Eject" is displayed and aging started.
6. The sequence of CD aging is same as the CD aging mode, however the MD aging is repetition of changing the track after a few seconds recording.
7. The number of aging is displayed in hexadecimal. For example, AGING00000011 means the 17th routine of aging.
8. To exit this mode, press the **I/O** button to turn the power off, or press three buttons of **VOL +**, **CD** and **MD** simultaneously and cold reset is executed.

MD SECTION**Note 1:** About "R"

As this unit has only a few buttons, some operations require the use of remote commander buttons. These operations are indicated as "R" in this manual.

Example: **MENU/NO "R"**...Press the **MENU/NO** button of the remote commander.

Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.

In this case, press the **I/O** button to turn the power off, and retry to enter the MD test mode.

1. PRECAUTIONS FOR USE OF TEST MODE

- As operations related to loading will be performed regardless of the test mode operations being performed, be sure to check that the disc is stopped before setting and removing it. Even if the **MD** button is pressed while the disc is rotating during continuous playback, continuous recording, etc., the disc will not stop rotating. Therefore, it will be ejected while rotating. Be sure to press the **MD** button after pressing the **MENU/NO "R"** button and the rotation of disc is stopped.

1-1. Recording laser emission mode and operating buttons

- Continuous recording mode (CREC 2MODE)
- Laser power check mode (LDPWR CHECK)
- Laser power adjustment mode (LDPWR ADJUST)
- Comparison with initial Iop value written in nonvolatile memory (Iop Compare)
- Write current Iop value in read nonvolatile memory using microprocessor (Iop NV Save)
- Traverse (MO) check (EF MO CHECK)
- Traverse (MO) adjustment (EF MO ADJUST)
- When pressing the **REC/REC IT** button.

2. SETTING THE TEST MODE

The following is the method of entering the test mode.

- Procedure:**
1. Press the **I/O** button to turn the power on.
 2. Press the **FUNCTION** button to set the MD function.
 3. Press three buttons of **VOL -**, **■**, and **CD SYNC HIGH** (MD) simultaneously. When the test mode is set, "[Check]" will be displayed. Pressing the **◀◀ "R"** or **▶▶ "R"** button between the following three groups; ... ↔ [Check] ↔ [Service] ↔ [Develop] ↔ ...

Note: Do not use the test mode in the [Develop] group.

If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the **MENU/NO "R"** button immediately to exit the [Develop] group.

3. RELEASING THE TEST MODE

Procedure 1: Press the **REPEAT "R"** button to display "Initialize", then release the MD test mode.

Procedure 2: Press two button of **VOL -** and **MD** to display "Initialize", then release the MD test mode.

4. BASIC OPERATIONS OF THE TEST MODE

All operations are performed using the **◀◀ “R”**, **▶▶ “R”**, **ENTER/YES “R”** and **MENU/NO “R”**. The functions of these buttons are as follows.

Function name	Function
◀◀ “R” , ▶▶ “R” buttons	Changes parameters and modes
ENTER/YES “R” button	Proceeds onto the next step. Finalizes input
MENU/NO “R” button	Returns to previous step. Stops operations

5. SELECTING THE TEST MODE

There are 26 types of test modes as shown below. The groups can be switched by pressing the **◀◀ “R”** or **▶▶ “R”** button. After selecting the group to be used, press the **ENTER/YES “R”** button. After setting a certain group, pressing the **◀◀ “R”** or **▶▶ “R”** button switches modes shown below.

Refer to “Group” in the table for details can be selected.

All items used for servicing can be treated using group [Service]. So be carefully not to enter other groups by mistake.

Note: Do not use the test mode in the [Develop] group.

If used, the unit may not operate normally.

If the [Develop] group is set accidentally, press the **MENU/NO “R”** button immediately to exit the [Develop] group.

Display	No.	Details	Mark	Group	
				Check	Service
AUTO CHECK	C01	Automatic self-diagnosis			○
Err Display	C02	Error history display, clear			○
TEMP ADJUST	C03	Temperature compensation offset adjustment			○
LDPWR ADJUST	C04	Laser power adjustment			○
Iop Write	C05	Iop data writing			○
Iop NV Save	C06	Writes current Iop value in read nonvolatile memory using microprocessor			○
EF MO ADJUST	C07	Traverse (MO) adjustment			○
EF CD ADJUST	C08	Traverse (CD) adjustment			○
FBIAS ADJUST	C09	Focus bias adjustment			○
AG Set (MO)	C10	Auto gain output level adjustment (MO)			○
AG Set (CD)	C11	Auto gain output level adjustment (CD)			○
TEMP CHECK	C12	Temperature compensation offset check		○	○
LDPWR CHECK	C13	Laser power check		○	○
EF MO CHECK	C14	Traverse (MO) check		○	○
EF CD CHECK	C15	Traverse (CD) check		○	○
FBIAS CHECK	C16	Focus bias check		○	○
ScurveCHECK	C17	S-curve check	×	○	
VERIFYMODE	C18	Nonvolatile memory check	×	○	
DETRK CHECK	C19	Detrack check	×	○	
0920 CHECK	C25	Most circumference check	×	○	
Iop Read	C26	Iop data display		○	○
Iop Compare	C27	Comparison with initial Iop value written in nonvolatile memory		○	○
ADJ CLEAR	C28	Initialization of nonvolatile memory for adjustment values			○
INFORMATION	C31	Display of microprocessor version, etc.		○	○
CPLAY2MODE	C36	Continuous playback mode		○	○
CREC 2MODE	C37	Continuous recording mode		○	○

- For details of each adjustment mode, refer to “5. Electrical Adjustments”.
- If a different mode has been selected by mistake, press the **MENU/NO “R”** button to release that mode.
- Modes with (×) in the Mark column are not used for servicing and therefore are not described in detail. If these modes are set accidentally, press the **MENU/NO “R”** button to release the mode immediately.

5-1. Operating the Continuous Playback Mode

1. Entering the continuous playback mode

- (1) Set the disc in the unit. (Whichever recordable discs or discs for playback only are available)
- (2) Press the **◀◀ "R"** or **▶▶ "R"** button to display "CPLAY2MODE" (C36).
- (3) Press the **ENTER/YES "R"** button to change the display to "CPLAY2MID".
- (4) When access completes, the display changes to "C = 0000 AD = 000".

Note: The numbers "00" displayed show you error rates and ADER.

2. Changing the parts to be played back

- (1) Press the **ENTER/YES "R"** button during continuous playback to change the display as below.

"CPLAY2MID" → "CPLAY2OUT" → "CPLAY2IN"

When pressed another time, the parts to be played back can be moved.

- (2) When access completes, the display changes to "C = 0000 AD = 000".

Note: The numbers "00" displayed show you error rates and ADER.

3. Ending the continuous playback mode

- (1) Press the **MENU/NO "R"** button. The display will change to "CPLAY2MODE" (C36).
- (2) Press the **MD ▲** button and take out the disc.

Note: The playback start addresses for IN, MID, and OUT are as follows.

IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster

5-2. Operating the Continuous Recording Mode (Use only when performing self-recording/palyback check)

1. Entering the continuous recording mode

- (1) Set a recordable disc in the unit.
- (2) Press the **◀◀ "R"** or **▶▶ "R"** button to display "CREC 2MODE" (C37).
- (3) Press the **ENTER/YES "R"** button to change the display to "CREC 2MID".
- (4) When access completes, the display changes to "CREC 2(0000)" and "**REC**" is displayed.

Note: The numbers "00" displayed shows you the recording position addresses.

2. Changing the parts to be recorded

- (1) When the **ENTER/YES "R"** button is pressed during continuous recording, the display changes as below.

"CREC 2MID" → "CREC 2OUT" → "CREC 2IN"

When pressed another time, the parts to be recorded can be changed. "**REC**" goes off.

- (2) When access completes, the display changes to "CREC 2(0000)" and "**REC**" is displayed.

Note: The numbers "00" displayed shows you the recording position addresses.

3. Ending the continuous recording mode

- (1) Press the **MENU/NO "R"** button. The display changes to "CREC 2MODE" (C37) and "**REC**" goes off.
- (2) Press the **MD ▲** button and take out the disc.

Note 1: The recording start addresses for IN, MID, and OUT are as follows.










IN : 40h cluster
MID : 300h cluster
OUT : 700h cluster

Note 2: The **MENU/NO "R"** button can be used to stop recording anytime.

Note 3: Do not perform continuous recording for long periods of time above 5 minutes.

Note 4: During continuous recording, be careful not to apply vibration.

6. FUNCTIONS OF OTHER BUTTONS

Function	Contents
	Sets continuous playback when this is pressed in the STOP state. When this is pressed during continuous playback, playback position moves.
	Stops continuous playback and continuous recording
 "R"	The sled moves to the outer circumference only when this is pressed
 "R"	The sled moves to the inner circumference only when this is pressed
 +  /  TUNING +	Switches the spindle servo mode (CLV S ↔ CLV A)
VOL - + 	Switches the displayed contents each time the button is pressed
MD 	Ejects the disc
REPEAT "R"	Releases the test mode




7. AUTOMATIC SELF-DIAGNOSIS FUNCTION

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up.

To perform this test mode, the laser power must first be checked.

Perform AUTO CHECK after the laser power check and Iop Compare.

Procedure:

1. Press the  "R" or  "R" button to display "AUTO CHECK" (C01).
2. Press the  "R" button. If "LDPWR ミチエック" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop Compare, and then repeat from enter the MD test mode.
3. If a disc is in the mechanical deck, it will be ejected forcibly.
"DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "60 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in step 5, the check will automatically be resumed from "07 CHECK".
7. After completing to test item 12 ("0C CHECK"), check OK or NG will be displayed. If all items are OK, "CHK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".





When "CHK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of other parts (spindle motor, sled motor, etc.).

When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

8. INFORMATION

Display the software version.




















Procedure:

1. Press the  "R" or  "R" button to display "INFORMATION" (C31).
2. Press the  "R" button.
3. The software version will be displayed.
4. Press the  "R" button to end this mode.














Iop DATA RECORDING AND DISPLAY WHEN OPTICAL PICK-UP AND NON-VOLATILE MEMORY (IC195 OF BD (MD) BOARD) ARE REPLACED

The Iop value labeled on the optical pick-up can be recorded in the non-volatile memory. By recording the value, it will eliminate the need to look at the value on the label of the optical pick-up. When replacing the optical pick-up or non-volatile memory (IC195 of BD (MD) board), record the Iop value on the optical pick-up according to the following procedure.

Record Procedure:

1. Press the  button to turn the power on.
2. Press the  button to set the MD function.
3. Press three buttons of ,  and , simultaneously to enter the MD test mode and display "[Check]".
4. Press the  "R" or  "R" button to display "[Service]".
5. Press the  "R" button to display "AUTO CHECK", and press the  "R" button to display "Iop Write".
6. Press the  "R" button.
7. The display becomes "Ref= @ @ @ .@" (@ is an arbitrary number) and the numbers which can be changed will blink.
8. Input the Iop value written on the optical pick-up.
To select the number : Press the  "R" or  "R" button.
To select the digit : Press two buttons of  and  simultaneously.
9. When the  "R" button is pressed, the display becomes "Measu=@ @ @ .@" (@ is an arbitrary number).
10. As the adjustment results are recorded for the step 9 value. Leave it as it is and press the  "R" button.
11. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write".
12. Press the  "R" button, or press two buttons of  and  simultaneously to complete. "Initialize" will be displayed and release the MD test mode.






Display Procedure:

1. Press the  button to turn the power on.
2. Press the  button to set the MD function.
3. Press three buttons of , , and , simultaneously to enter the MD test mode and display "[Check]".
4. Press the  "R" or  "R" button to display "[Service]".
5. Press the  "R" button to display "AUTO CHECK", and press the  "R" button to display "Iop Read".
6. Press the  "R" button.
7. "@ @ .@ /##.@" is displayed and the recorded contents are displayed.
@ @ .@ : Indicates the Iop value labeled on the pick-up.
##.# : Indicates the Iop value after adjustment.
8. Press the  "R" button or press two buttons of  and  simultaneously to complete. "Initialize" will be displayed and release the MD test mode.

WHEN MEMORY NG IS DISPLAYED

If the nonvolatile memory data is abnormal, "E001 MEMORY NG" will be displayed so that the MD deck does not continue operations. In this case, set the test mode promptly and perform the following procedure.

Procedure:

1. Enter the MD test mode.
2. Normally a message for selecting the test mode will be displayed. However if the nonvolatile memory is abnormal, the following will be displayed "INIT EEP?".
3. Press the  and  buttons simultaneously.
4. Press the  "R" or  "R" button to display "MDM-7X2B".
5. Press the  button. If the nonvolatile memory is successfully overwritten, the normal MD test mode will be set and a message to select the MD test mode will be displayed.

CHECKS PRIOR TO PARTS REPLACEMENT AND ADJUSTMENTS IN MD

Before performing repairs, perform the following checks to determine the faulty locations up to a certain extent. Details of the procedures are described in “5 Electrical Adjustments”.

	Criteria for Determination (Unsatisfactory if specified value is not satisfied)	Measure if unsatisfactory
Laser power check (6-2 : See page 37)	<ul style="list-style-type: none">0.9 mW power Specified value : figure18.4 mW power Specified value : figure2	<ul style="list-style-type: none">Clean the optical pick-upAdjust againReplace the optical pick-up
	<ul style="list-style-type: none">Iop (at 8.4mW)Labeled on the optical pick-upIop value \pm 10mA	<ul style="list-style-type: none">Replace the optical pick-up
Auto check (6-4 : See page 38)	<ul style="list-style-type: none">Unsatisfactory if displayed as “NG: XXXX” (X is an arbitrary number)	<ul style="list-style-type: none">Replace the optical pick-up
Temperature compensation offset check (6-1 : See page 37)	<ul style="list-style-type: none">Unsatisfactory if displayed as “T=@@ (##) [NG]” (@@, ## are both arbitrary numbers)	<ul style="list-style-type: none">Check for disconnection of the circuits around D101 (BD (MD) board)Check the signals around IC101, IC151, CN102, CN103 (BD (MD) board)

Note:
The criteria for determination above is intended merely to determine if satisfactory or not, and does not serve as the specified value for adjustments.
When performing adjustments, use the specified values for adjustments.

Figure1:

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

Figure2:

SPECIFIED VALUE	KMS-262A	8.1 to 8.7 mW
	KMS-262E	8.4 to 8.9 mW

RETRY CAUSE DISPLAY MODE IN MD

- In this test mode, the causes for retry of the unit during recording can be displayed on the fluorescent indicator tube. During playback, the “track mode” for obtaining track information will be set.
This is useful for locating the faulty part of the unit.
- The following will be displayed.
During recording and stop : Retry cause, number of retries, and number of retry errors.
During playback : Information such as type of disc played, part played, copyright.
These are displayed in hexadecimal.

Precedure:

- Load a recordable disc whose contents can be erased into the unit.
- Press the **MENU/NO “R”** button. When “Edit Menu” is displayed on the fluorescent indicator tube, press the **I◀◀ “R”** or **▶▶ “R”** button to display “All Erase?”.
- Press the **ENTER/YES “R”** button.
- When “All Erase??” is displayed on the fluorescent indicator tube.
- Press the **ENTER/YES “R”** button to display “Complete!”.
- Press the **REC/REC IT** button to start recording. Then press the **▶||** button and start recording. If recording cannot be performed, press the **FUNCTION ●** button and set a different function.
- Press three buttons of **VOL -** , **▶||** and **CD SYNC HIGH** simultaneously to enter the retry cause display mode.
- To check the “track mode”, press the **▶||** button to start playback.
- To release this mode, press the **I/⏻** button to turn the power off. When “TOC” goes off, disconnect the power plug from the outlet.
If the test mode cannot be released, refer to “Factory Preset” on page 24.

**Fig. 1 Reading the Test Mode Display
(During recording and stop)**

RTs@@c##e**
fluorescent indicator tube

@@ : Cause of retry
: Number of retries
** : Number of retry errors

**Fig. 2 Reading the Test Mode Display
(During playback)**

@@ #### \$\$
fluorescent indicator tube

@@ : Parts No. (name of area named on TOC)
: Cluster
** : Sector
\$\$: Track mode (Track information such as
copyright information of each part)

Reading the Retry Cause Display

	Higher Bits				Lower Bits						
Hexadecimal	8	4	2	1	8	4	2	1	Hexadecimal	Cause of Retry	Occurring conditions
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	shock	When track jump (shock) is detected
	0	0	0	0	0	0	1	0	02	ader5	When ADER was counted more than five times continuously
	0	0	0	0	0	1	0	0	04	Discontinuous address	When ADIP address is not continuous
	0	0	0	0	1	0	0	0	08	DIN unlock	When DIN unlock is detected
	0	0	0	1	0	0	0	0	10	FCS incorrect	When not in focus
	0	0	1	0	0	0	0	0	20	IVR rec error	When ABCD signal level exceeds the specified range
	0	1	0	0	0	0	0	0	40	CLV unlock	When CLV is unlocked
	1	0	0	0	0	0	0	0	80	Access fault	When access operation is not performed normally

Reading the Display:

Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example

When 42 is displayed:

Higher bit: 4 = 0100 → b6

Lower bit : 2 = 0010 → b1

In this case, the retry cause is combined of “CLV unlock” and “ader5”.

When A2 is displayed:

Higher bit: A = 1010 → b7 + b5

Lower bit : 2 = 0010 → b1

The retry cause in this case is combined of “Access fault”, “IVR rec error”, and “ader5”.

Reading the Retry Cause Display

	Higher Bit				Lower Bits				Hexadecimal	Details	
Hexadecimal	8	4	2	1	8	4	2	1		When 0	When 1
Bit	b7	b6	b5	b4	b3	b2	b1	b0			
Binary	0	0	0	0	0	0	0	1	01	Emphasis OFF	Emphasis ON
	0	0	0	0	0	0	1	0	02	Monaural	Stereo
	0	0	0	0	0	1	0	0	04	This is 2-bit display. Normally 01. 01:Normal audio. Others:Invalid	
	0	0	0	0	1	0	0	0	08		
	0	0	0	1	0	0	0	0	10	Audio (Normal)	Invalid
	0	0	1	0	0	0	0	0	20	Original	Digital copy
	0	1	0	0	0	0	0	0	40	Copyright	No copyright
	1	0	0	0	0	0	0	0	80	Write prohibited	Write allowed

Reading the Display:
Convert the hexadecimal display into binary display. If more than two causes, they will be added.

Example When 84 is displayed:
Higher bit: 8 = 1000 → b7
Lower bit : 4 = 0100 → b2
In this case, as b2 and b7 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis OFF”, “Monaural”, “Original”, “Copyright”, and “Write allowed”.

Example When 07 is displayed:
Higher bit: 0 = 0000 → All 0
Lower bit : 7 = 0111 → b0 + b1 + b2
In this case, as b0, b1, and b2 are 1 and others are 0, it can be determined that the retry cause is combined of “Emphasis ON”, “Stereo”, “Original”, “Copyright”, and “Write prohibited”.

Hexadecimal → Binary Conversion Table			
Hexadecimal	Binary	Hexadecimal	Binary
0	0000	8	1000
1	0001	9	1001
2	0010	A	1010
3	0011	B	1011
4	0100	C	1100
5	0101	D	1101
6	0110	E	1110
7	0111	F	1111

SECTION 5 ELECTRICAL ADJUSTMENTS

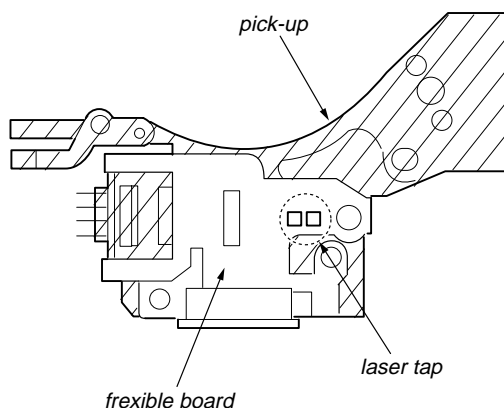
CD SECTION

Note 1:

1. CD Block is basically designed to operate without adjustment. Therefore, check each item in order given.
2. Use YEDS-18 disc (3-702-101-01) unless otherwise indicated.
3. Use an oscilloscope with more than $10M\Omega$ impedance.
4. Clean the object lens by an applicator with neutral detergent when the signal level is low than specified value with the following checks.

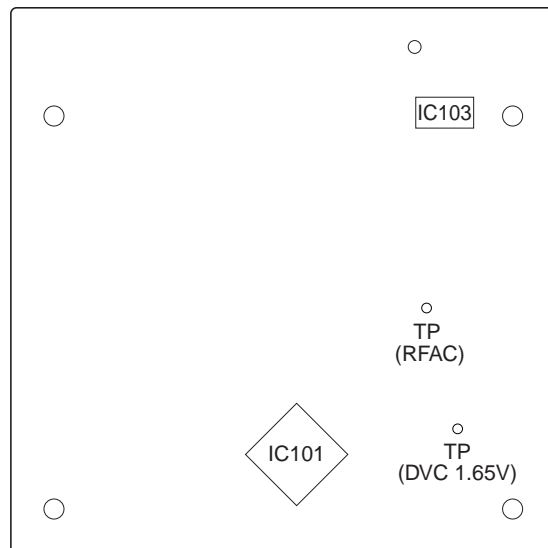
Note 2:

As the laser diode in the optical pick-up (OPTIMA-720L1E) is easily damaged by static electricity, solder the laser tap of the flexible board when handling it. Before disconnecting the connector, solder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



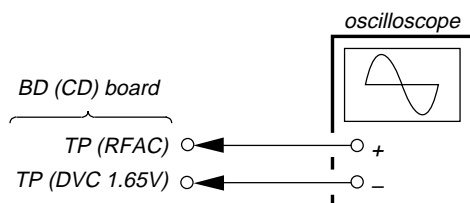
Checking Location:

– BD (CD) BOARD –



RF Level Check

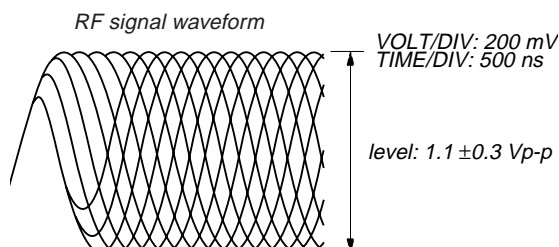
Connection:



Procedure:

1. Connect an oscilloscope to test point TP (RFAC) and TP (DVC 1.65V) on the BD (CD) board.
2. Turn the power on.
3. Put the disc (YEDS-18) in to playback the number five track.
4. Confirm that oscilloscope waveform is clear and check RF signal level is correct or not.

Note: A clear RF signal waveform means that the shape “ \diamond ” can be clearly distinguished at the center of the waveform.



Checking Location: BD (CD) board

MD SECTION

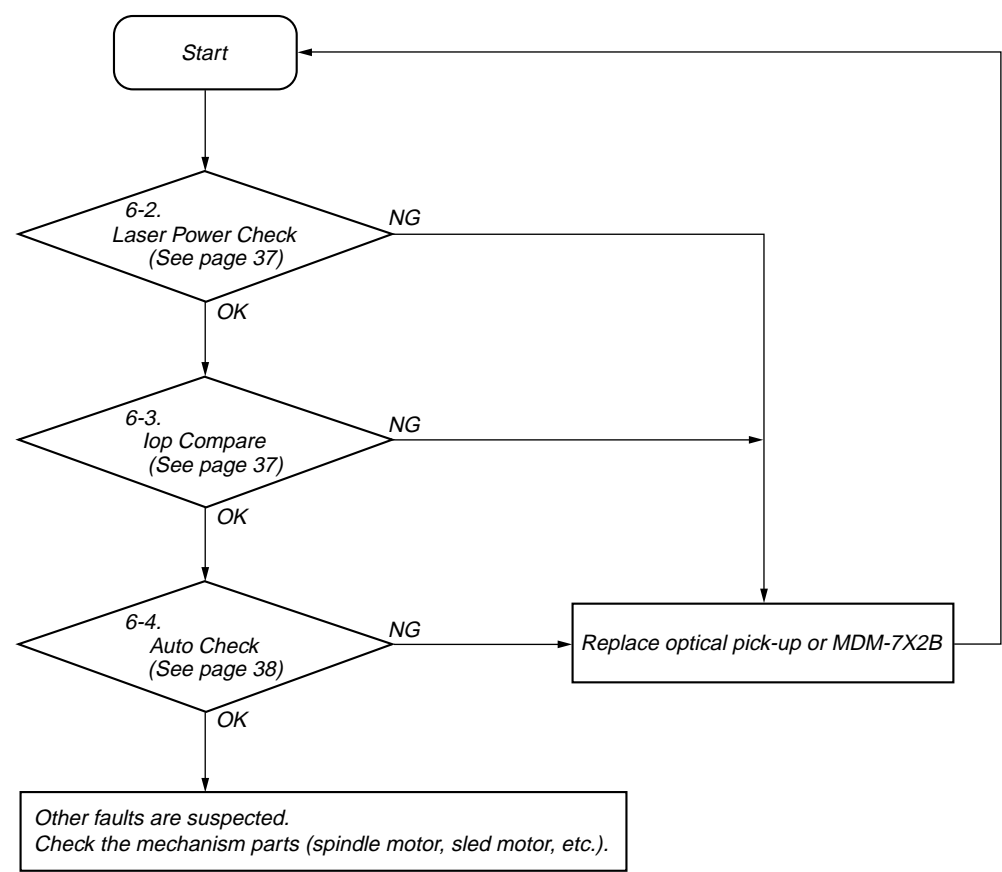
Note 1: About “R”
As this unit has only a few buttons, some operations require the use of remote commander buttons. These operations are indicated as “R” in this manual.
Example: **MENU/NO “R”** ...Press the **MENU/NO** button of the remote commander.

Note 2: Incorrect operations may be performed if the MD test mode is not entered properly.
In this case, press the **I/⏻** button to turn the power off, and retry to enter the MD test mode.

1. PARTS REPLACEMENT AND ADJUSTMENT

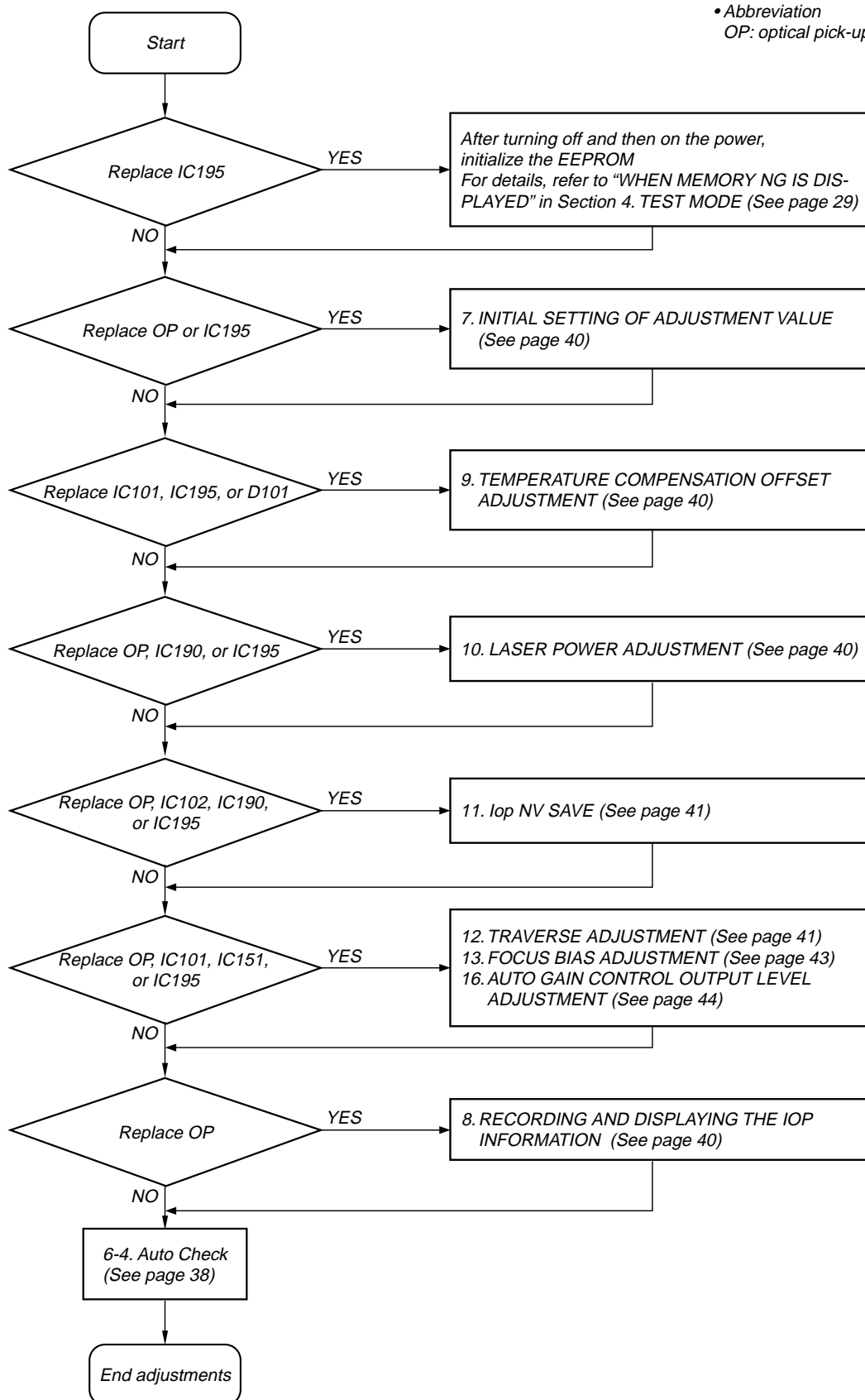
If malfunctions caused by optical pick-up such as sound skipping are suspected, follow the following check.

Check before replacement



Adjustment flow

• Abbreviation
OP: optical pick-up



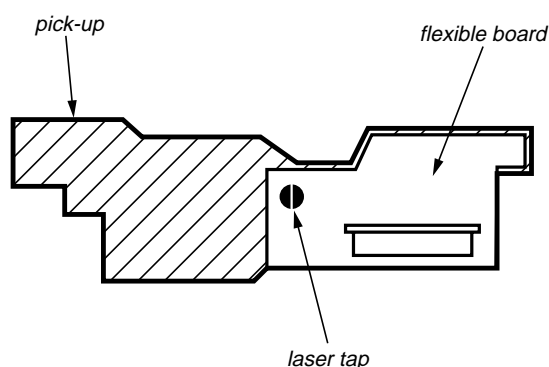
2. PRECAUTIONS FOR CHECKING LASER DIODE EMISSION

To check the emission of the laser diode during adjustments, never view directly from the top as this may lose your eye-sight.

3. PRECAUTIONS FOR USE OF OPTICAL PICK-UP (KMS-262A/262E)

As the laser diode in the optical pick-up is easily damaged by static electricity, solder the laser tap of the flexible board when handling it.

Before disconnecting the connector, solder first. Before connecting the connector, be careful not to remove the solder. Also take adequate measures to prevent damage by static electricity. Handle the flexible board with care as it breaks easily.



Optical pick-up flexible board

4. PRECAUTIONS FOR ADJUSTMENTS

- When replacing the following parts, perform the adjustments and checks with ○ in the order shown in the following table.
- Set the MD test mode when performing adjustments. After completing the adjustments, exit the MD test mode. Perform the adjustments and checks in “Group Service” of the MD test mode.
- Perform the adjustments to be needed in the order shown.
- Use the following tools and measuring devices.
 - Check Disc (TDYS-1) (Part No. : 4-963-646-01)
 - Test Disk (MDW-74/GA-1) (Part No. : 4-229-747-01)
 - Laser power meter LPM-8001 (Part No. : J-2501-046-A) or MD Laser power meter 8010S (Part No. : J-2501-145-A)*¹
 - Oscilloscope (Measure after performing CAL of prove.)
 - Digital voltmeter
 - Thermometer
 - Jig for checking BD (MD) board waveform (Part No. : J-2501-196-A)
- When observing several signals on the oscilloscope, etc., make sure that VC and ground do not connect inside the oscilloscope. (VC and ground will become short-circuited.)
- Using the above jig enables the waveform to be checked without the need to solder. (Refer to Servicing Notes on page 6.)
- As the disc used will affect the adjustment results, make sure that no dusts nor fingerprints are attached to it.

*¹ Laser power meter

When performing laser power checks and adjustment (electrical adjustment), use of the new MD laser power meter 8010S (Part No. J-2501-145-A) instead of the conventional laser power meter is convenient.

It sharply reduces the time and trouble to set the laser power meter sensor onto the objective lens of optical pick-up.

Adjustment	Parts to be replaced						
	Optical Pick-up	IC101	IC102	IC151	IC190	IC195	D101
7. Initial setting of adjustment value	○	×	×	×	×	○	×
8. Recording of Iop information	○	×	×	×	×	○	×
9. Temperature compensation offset adjustment	×	○	×	×	×	○	○
10. Laser power adjustment	○	×	×	×	○	○	×
11. Iop NV Save	○	×	○	×	○	○	×
12. Traverse adjustment	○	○	×	○	×	○	×
13. Focus bias adjustment	○	○	×	○	×	○	×
16. Auto gain control output level adjustment	○	○	×	○	×	○	×
6-4. AUTO CHECK	○	○	×	○	○	○	×

5. USING THE CONTINUOUSLY RECORDED DISC

* This disc is used in focus bias adjustment and error rate check. The following describes how to create a continuous recording disc.

1. Insert a disc (blank disc) commercially available.
2. Press the **◀◀ "R"** or **▶▶ "R"** button and display "CREC 2MODE" (C37).
3. Press the **ENTER/YES "R"** button again to display "CREC 2 MID". Display "CREC 2(0300)" and start to recording.
4. Complete recording within 5 minutes.
5. Press the **MENU/NO "R"** button and stop recording.
6. Press the **MD ▲** button and remove the disc.

The above has been how to create a continuous recorded data for the focus bias adjustment and error rate check.

Note: Be careful not to apply vibration during continuous recording.

6. CHECKS PRIOR TO REPAIRS

These checks are performed before replacing parts according to "approximate specifications" to determine the faulty locations. For details, refer to "Checks Prior to Parts Replacement and Adjustments in MD" (see page 30).

6-1. Temperature Compensation Offset Check

When performing adjustments, set the internal temperature and room temperature to 22 to 28°C.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "TEMP CHECK" (C12).
2. Press the **ENTER/YES "R"** button.
3. "T=@@ (##) [OK]" should be displayed. If "T=@@ (##) [NG]" is displayed, it means that the results are bad. (@@ indicates the current value set, and ## indicates the value written in the non-volatile memory.)

6-2. Laser Power Check

Before starting adjustment;

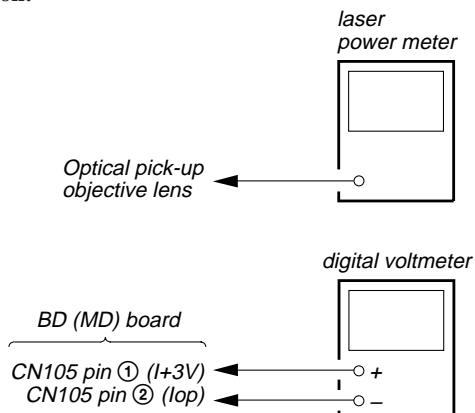
The laser power adjustment value changes depending upon the types of the optical pick-up (KMS-262A or KMS-262E).

Check the type of the optical pick-up before starting adjustment. (See the illustrations "The method of identifying the optical pick-up" on page 41)

Before checking, check the Iop value of the optical pick-up.

(Refer to 8. Recording and Displaying the Iop Information (see page 40))

Connection:



Procedure:

1. Set the laser power meter on the objective lens of the optical pick-up. (When it cannot be set properly, press the **◀◀ "R"** button or **▶▶ "R"** button to move the optical pick-up.) Connect the digital volt meter to CN105 pin ① (I+3V) and CN105 pin ② (Iop).
2. Then, press the **◀◀ "R"** or **▶▶ "R"** button and display "LDPWR CHECK" (C13).
3. Press the **ENTER/YES "R"** button once and display "L0.90mW\$ 0.0". Check that the reading of the laser power meter becomes specified value.

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

4. Press the **ENTER/YES "R"** button once more and display "L8.40mW\$ 0.0". Check that the reading the laser power meter and digital volt meter satisfy the specified value.

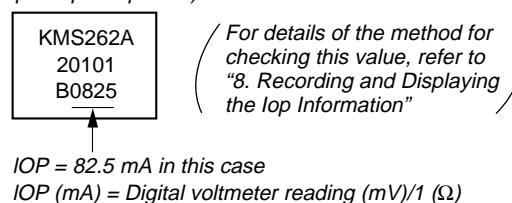
Specified Value:

Laser power meter reading :

KMS-262A	8.1 to 8.7 mW
KMS-262E	8.4 to 8.9 mW

Digital voltmeter reading : Optical pick-up displayed value $\pm 10\%$

(Optical pick-up label)



5. Press the **MENU/NO "R"** button and display "LDPWR CHECK" (C13) and stop the laser emission. (The **MENU/NO "R"** button is effective at all times to stop the laser emission.)

Note: After step 4, each time the **ENTER/YES "R"** button is pressed, the display will be switched to "L0.70W\$ 0.0" and "L7.50mW\$ 0.0" "LWP ホセ イ \$ 0.0". Nothing needs to be performed here.

Checking Location: BD (MD) board (see page 44)

6-3. Iop Compare

The current Iop value at laser power 8.4 mW output and reference Iop value (set at shipment) written in the nonvolatile memory are compared, and the rate of increase/decrease will be displayed in percentage.

Note: Perform this function with the optical pick-up set at room temperature.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Compare" (C27).
2. Press the **ENTER/YES "R"** button and start measurements.
3. When measurements complete, the display changes to " $\pm xx\% yy$ ". xx is the percentage of increase/decrease, and OK or NG is displayed at yy to indicate whether the percentage of increase/decrease is within the allowable range.
4. Press the **MENU/NO "R"** button to end.

6-4. Auto Check

This test mode performs CREC and CPLAY automatically for mainly checking the characteristics of the optical pick-up. To perform this test mode, the laser power must first be checked. Perform Auto Check after the laser power check and Iop compare.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "AUTO CHECK" (C01).
2. Press the **ENTER/YES "R"** button. If "LDPWR ミチエック" is displayed, it means that the laser power check has not been performed. In this case, perform the laser power check and Iop Compare, and then repeat from enter the MD test mode.
3. If a disc is in the mechanical deck, it will be ejected forcibly. "DISC IN" will be displayed in this case. Load a test disc (MDW-74/GA-1) which can be recorded.
4. If a disc is loaded at step 3, the check will start automatically.
5. When "XX CHECK" is displayed, the item corresponding to XX will be performed.
When "06 CHECK" completes, the disc loaded at step 3 will be ejected. "DISC IN" will be displayed. Load the check disc (TDYS-1).
6. When the disc is loaded in the step 5, the check will automatically be resumed from "07 CHECK".
7. After completing to test item 12 ("0C CHECK"), check OK or NG will be displayed. If all items are OK, "CHK ALL OK" will be displayed. If any item is NG, it will be displayed as "NG:xxxx".

When "CHK ALL OK" is displayed, it means that the optical pick-up is normal. Check the operations of other parts (spindle motor, sled motor, etc.).
When displayed as "NG:xxxx", it means that the optical pick-up is faulty. In this case, replace the optical pick-up.

6-5. Other Checks

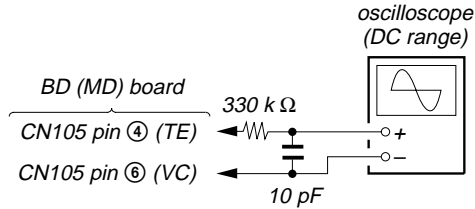
All the following checks are performed by the Auto Check mode. They therefore need not be performed in normal operation.

- 6-6. Traverse Check
- 6-7. Focus Bias Check
- 6-8. C PLAY Check
- 6-9. Self-Recording/Playback Check

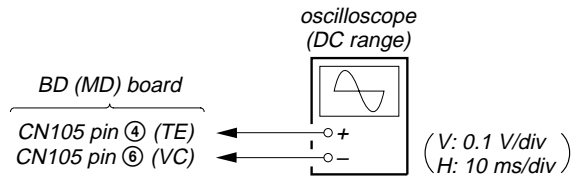
6-6. Traverse Check

Note 1: Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2: If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



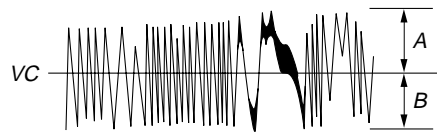
Connection:



Procedure:

1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶ "R"** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO CHECK" (C14).
5. Press the **ENTER/YES "R"** button to display "EFB = ◻◻ MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button.
(Read power traverse checking)

Traverse Waveform

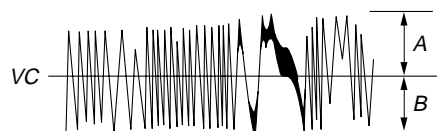


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{1A - B1}{2(A + B)} \times 100$$

7. Press the **ENTER/YES "R"** button to display "EFB = ◻◻ MO-W".
8. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **◀◀ "R"** or **▶▶ "R"** button. (Write power traverse checking)

Traverse Waveform

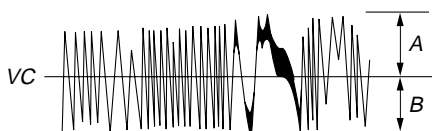


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{1A - B1}{2(A + B)} \times 100$$

9. Press the **[ENTER/YES "R"]** button to display "EFB = 00 MO-P".
Then, the optical pick-up moves to the pit area automatically and servo is imposed.
10. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **[◀◀ "R"]** or **[▶▶ "R"]** button.

Traverse Waveform

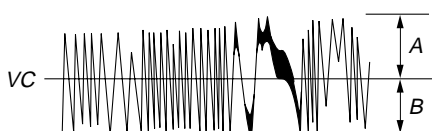


Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

11. Press the **[ENTER/YES "R"]** button to display "EF MO CHECK" (C14).
The disc stops rotating automatically.
12. Press the **[MD ▲]** button and take out the disc.
13. Load the check disc (TDYS-1).
14. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button and display "EF CD CHECK" (C15).
15. Press the **[ENTER/YES "R"]** button to display "EFB = 00 CD".
Servo is imposed automatically.
16. Observe the waveform of the oscilloscope, and check that the specified value is satisfied. Do not press the **[◀◀ "R"]** or **[▶▶ "R"]** button.

Traverse Waveform



Specified value : Below 10% offset value

$$\text{Offset value (\%)} = \frac{|A - B|}{2(A + B)} \times 100$$

17. Press the **[ENTER/YES "R"]** button to display "EF CD CHECK" (C15).
18. Press the **[MD ▲]** button and take out the check disc (TDYS-1).

Checking Location: BD (MD) board (see page 44)

6-7. Focus Bias Check

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "CPLAY 2MODE" (C36).
3. Press the **[ENTER/YES "R"]** button to display "CPLAY 2MID".
4. Press the **[MENU/NO "R"]** button when "C = 0000 AD = 00" is displayed.
5. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "FBIAS CHECK" (C16).

6. Press the **[ENTER/YES "R"]** button to display "0000/00 c = 00".
The first four digits indicate the C1 error rate, the two digits after [/] indicate ADER, and the 2 digits after [c =] indicate the focus bias value.
Check that the C1 error is below 20 and ADER is below 2.
7. Press the **[ENTER/YES "R"]** button to display "0000/00 b = 00".
Check that the C1 error is about 100 and ADER is below 2.
8. Press the **[ENTER/YES "R"]** button to display "0000/00 a = 00".
Check that the C1 error is about 100 and ADER is below 2.
9. Press the **[MENU/NO "R"]** button, then press the **[MD ▲]** button and take out the test disc.

6-8. C PLAY Check

MO Error Rate Check

Procedure:

1. Load the test disc (MDW-74/GA-1).
2. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "CPLAY 2MODE" (C36).
3. Press the **[ENTER/YES "R"]** button to display "CPLAY 2MID".
4. The display changes to "C = 0000 AD = 00".
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the **[MENU/NO "R"]** button to stop playback, then press the **[MD ▲]** button and take out the test disc.

CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "CPLAY 2MODE" (C36).
3. Press the **[ENTER/YES "R"]** button to display "CPLAY 2MID".
4. The display changes to "C = 0000 AD = 00".
5. Check that the C1 error rate is below 20.
6. Press the **[MENU/NO "R"]** button to stop playback, then press the **[MD ▲]** button and take out the check disc.

6-9. Self-Recording/playback Check

Prepare a continuous recording disc using the unit to be repaired and check the error rate.

Procedure:

1. Load a recordable disc (blank disc).
2. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "CREC 2MODE" (C37).
3. Press the **[ENTER/YES "R"]** button to display "CREC 2MID".
4. When recording starts, "**[REC]**" and display "CREC 2 @@@@" (@@@@ is the address).
5. About 1 minute later, press the **[MENU/NO "R"]** button to stop continuous recording.
6. Press the **[◀◀ "R"]** or **[▶▶ "R"]** button to display "CPLAY 2MODE" (C36).
7. Press the **[ENTER/YES "R"]** button to display "CPLAY 2MID".
8. "C = 0000 AD = 00" will be displayed.
9. Check that the C1 error becomes below 20 and the AD error below 2.
10. Press the **[MENU/NO "R"]** button to stop playback, then press the **[MD ▲]** button and take out the disc.

7. INITIAL SETTING OF ADJUSTMENT VALUE

Note:

Mode which sets the adjustment results recorded in the non-volatile memory to the initial setting value. However the results of the temperature compensation offset adjustment will not change to the initial setting value. If initial setting is performed, perform all adjustments again excluding the temperature compensation offset adjustment. For details of the initial setting, refer to "4. Precautions for Adjustments" (See page 36) and execute the initial setting before the adjustment as required.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "ADJ CLEAR" (C28).
2. Press the **ENTER/YES "R"** button. "Complete!" will be displayed momentarily and initial setting will be executed, after which "ADJ CLEAR" (C28) will be displayed.

8. RECORDING AND DISPLAYING THE Iop INFORMATION

The Iop data can be recorded in the non-volatile memory. The Iop value on the optical pick-up label and the Iop value after the adjustment will be recorded. Recording these data eliminates the need to read the label on the optical pick-up.

Recording Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05), and press the **ENTER/YES "R"** button.
2. The display becomes "Ref=@@.@" (@ is an arbitrary number) and the numbers which can be changed will blink.
3. Input the Iop value on the optical pick-up label.
To select the number : Press the **◀◀ "R"** or **▶▶ "R"** button.
To select the digit : Press two buttons of **VOL -** and **CD ▲** simultaneously.
4. When the **ENTER/YES "R"** button is pressed, the display becomes "Measu=@@.@" (@ is an arbitrary number).
5. As the adjustment results are recorded for the step 4 value. Leave it as it is and press the **ENTER/YES "R"** button.
6. "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Display Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Read" (C26) and press the **ENTER/YES "R"** button.
2. "@@.@@/##.#" is displayed and the recorded contents are displayed.
@@.@@ indicates the Iop value on the optical pick-up label.
##.## indicates the Iop value after adjustment
3. To end, press the **MENU/NO "R"** button to display "Iop Read" (C26).

9. TEMPERATURE COMPENSATION OFFSET ADJUSTMENT

Save the temperature data at that time in the non-volatile memory as 25 °C reference data.

Note:

1. Usually, do not perform this adjustment.
2. Perform this adjustment in an ambient temperature of 22 °C to 28 °C. Perform it immediately after the power is turned on when the internal temperature of the unit is the same as the ambient temperature of 22 °C to 28 °C.
3. When D101 has been replaced, perform this adjustment after the temperature of this part has become the ambient temperature.

Procedure:

1. Press the **◀◀ "R"** or **▶▶ "R"** button to display "TEMP ADJUST" (C03).
2. Press the **ENTER/YES "R"** button to select the "TEMP ADJUST" mode.
3. "TEMP = 0.0 [OK]" and the current temperature data will be displayed.
4. To save the data, press the **ENTER/YES "R"** button.
When not saving the data, press the **MENU/NO "R"** button.
5. When the **ENTER/YES "R"** button is pressed, "TEMP = 0.0 SAVE" will be displayed and turned back to "TEMP ADJUST" (C03) display then. When the **MENU/NO "R"** button is pressed, "TEMP ADJUST" (C03) will be displayed immediately.

Specified Value:

The "TEMP = 0.0" should be within "E0 - EF", "F0 - FF", "00 - 0F", "10 - 1F" and "20 - 2F".

10. LASER POWER ADJUSTMENT

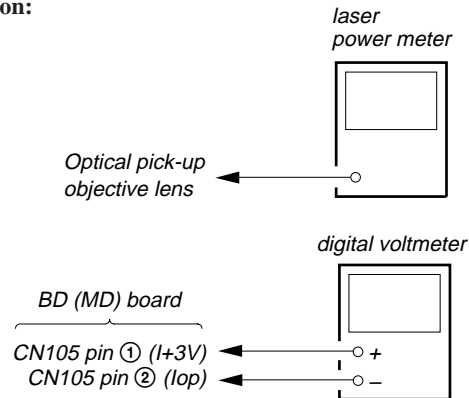
Before starting adjustment;

The laser power adjustment value changes depending upon the types of the optical pick-up (KMS-262A or KMS-262E).

Check the type of the optical pick-up before starting adjustment. (See the illustrations "The method of identifying the optical pick-up on page 41.)

Check the Iop value of the optical pick-up before adjustments. (Refer to 8. Recording and Displaying the Iop Information)

Connection:



Procedure:

1. Insert the laser power meter probe into the disc insertion slot and set it on top of the objective lens of the optical pick-up. (When it cannot be set properly, press the **◀◀ "R"** button or **▶▶ "R"** button to move the optical pick-up)
Connect the digital voltmeter to CN105 pin ① (I+3V) and CN105 pin ② (Iop) on the BD (MD) board.
2. Press the **◀◀ "R"** or **▶▶ "R"** button to display "LDPWR ADJUST" (C04).
(Laser power : For adjustment)
3. Press the **ENTER/YES "R"** button once to display "L 0.90 mW \$ 0.0".
4. Press the **◀◀ "R"** or **▶▶ "R"** button until the laser power meter reading matches with the specified value as described in the following table.

SPECIFIED VALUE	KMS-262A	0.85 to 0.91 mW
	KMS-262E	0.90 to 0.95 mW

Press the **ENTER/YES "R"** button after setting the range knob of the laser power meter, and save the adjustment results. ("LD SAVE \$ 0.0" will be displayed for a moment)

5. Then "L 8.40 mW \$ 0.0" will be displayed.

6. Press the **◀◀ "R"** or **▶▶ "R"** button so that the reading of the laser power meter becomes the specified value, press the **ENTER/YES "R"** button to save it.

SPECIFIED VALUE	KMS-262A	8.2 to 8.6 mW
	KMS-262E	8.5 to 8.8 mW

Note: Do not perform the emission with 8.4 mW more than 15 seconds continuously.

7. Then, press the **◀◀ "R"** or **▶▶ "R"** button to display "LDPWR CHECK" (C13).
8. Press the **ENTER/YES "R"** button once to display "L0.90mW\$". Check that the reading of the laser power meter matches with the specified value as described in the following table.

SPECIFIED VALUE	KMS-262A	0.84 to 0.92 mW
	KMS-262E	0.90 to 0.96 mW

9. Press the **ENTER/YES "R"** button once more to display "L8.40mW\$". Check that the reading the laser power meter and digital voltmeter satisfy the specified value.
Note down the digital voltmeter reading value.

Specified Value:

Laser power meter reading :

SPECIFIED VALUE	KMS-262A	8.1 to 8.7 mW
	KMS-262E	8.4 to 8.9 mW

Digital voltmeter reading : Value on the optical pick-up label $\pm 10\%$

(Optical pick-up label)

KMS262A
20101
B0825

(For details of the method for checking this value, refer to "8. Recording and Displaying the Iop Information")

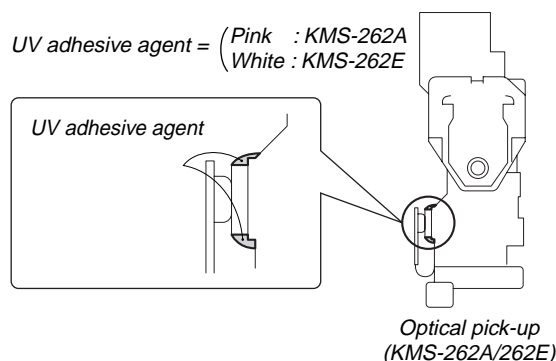
Iop = 82.5 mA in this case

$Iop (mA) = \text{Digital voltmeter reading (mV)} / 1 (\Omega)$

10. Press the **MENU/NO "R"** button to display "LDPWR CHECK" (C13) and stop the laser emission.
(The **MENU/NO "R"** button is effective at all times to stop the laser emission)
11. Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop Write" (C05).
12. Press the **ENTER/YES "R"** button. When the display becomes "Ref=@@@.@", (@ is an arbitrary number), press the **ENTER/YES "R"** button to display "Measu=@@@.@", (@ is an arbitrary number).
13. The numbers which can be changed will blink. Input the Iop value noted down at step 9.
To select the number : Press the **◀◀ "R"** or **▶▶ "R"** button.
To select the digit : Press two buttons of **VOL -** and **CD** simultaneously.
14. When the **ENTER/YES "R"** button is pressed, "Complete!" will be displayed momentarily. The value will be recorded in the non-volatile memory and the display will become "Iop Write" (C05).

Note: After step 9, each time the **ENTER/YES "R"** button is pressed, the display will be switched to "L0.70mW\$", "L7.50mW\$" and "LWP ホセ イ \$". Nothing needs to be performed here.

The method of identifying the optical pick-up (KMS-262A/262E)



11. Iop NV SAVE

Write the reference values in the nonvolatile memory to perform "Iop compare". As this involves rewriting the reference values, do not perform this procedure except when adjusting the laser power during replacement of the optical pick-up and when replacing the IC102. Otherwise the optical pick-up check may deteriorate.

Note: Perform this function with the optical pick-up set at room temperature.

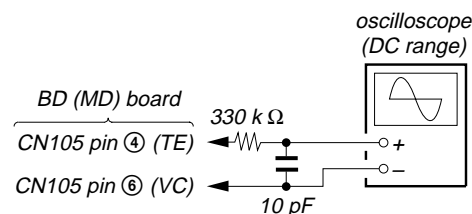
Procedure:

- Press the **◀◀ "R"** or **▶▶ "R"** button to display "Iop NV Save" (C06).
- Press the **ENTER/YES "R"** button and display "Iop [stop]".
- After the display changes to "Iop =xxsave?", press the **ENTER/YES "R"** button.
- After "Complete!" is displayed momentarily, the display changes to "Iop [8.4 mW]".
- After the display changes to "Iop=yy save?", press the **ENTER/YES "R"** button.
- When "Complete!" is displayed, it means that Iop NV saving has been completed.

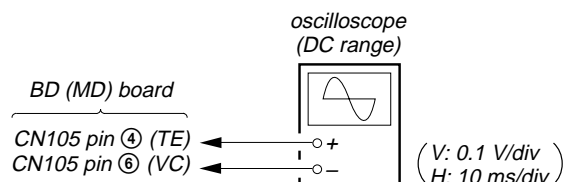
12. TRAVERSE ADJUSTMENT

Note 1: Data will be erased during MO reading if a recorded disc is used in this adjustment.

Note 2: If the traverse waveform is not clear, connect the oscilloscope as shown in the following figure so that it can be seen more clearly.



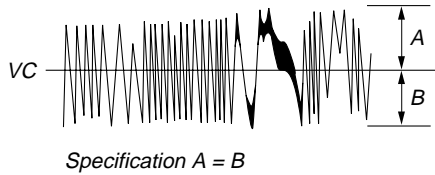
Connection:



Procedure:

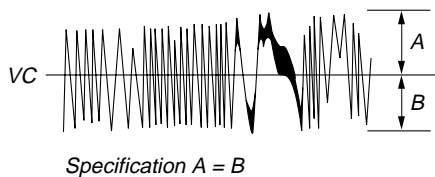
1. Connect an oscilloscope to CN105 pin ④ (TE) and CN105 pin ⑥ (VC) on the BD (MD) board.
2. Load a disc (any available on the market). (Refer to Note 1)
3. Press the **▶▶ "R"** button to move the optical pick-up outside the pit.
4. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF MO ADJUST" (C07).
5. Press the **ENTER/YES "R"** button to display "EFB = 00 MO-R". (Laser power READ power/Focus servo ON/tracking servo OFF/spindle (S) servo ON)
6. Press the **◀◀ "R"** or **▶▶ "R"** button so that the waveform of the oscilloscope becomes the specified value.
(When the **◀◀ "R"** or **▶▶ "R"** button is pressed, the 00 of "EFB=00" changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.
(Read power traverse adjustment)

Traverse Waveform



7. Press the **ENTER/YES "R"** button and save the result of adjustment to the non-volatile memory ("EFB = 00 SAVE" will be displayed for a moment. Then "EFB = 00 MO-W" will be displayed).
8. Press the **◀◀ "R"** or **▶▶ "R"** button so that the waveform of the oscilloscope becomes the specified value.
(When the **◀◀ "R"** or **▶▶ "R"** button is pressed, the 00 of "EFB= 00" changes and the waveform changes) In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible. (Write power traverse adjustment)

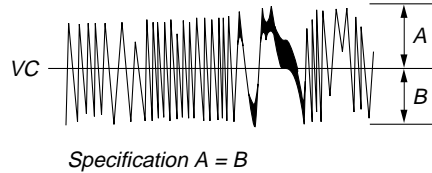
Traverse Waveform



9. Press the **ENTER/YES "R"** button, and save the adjustment results in the non-volatile memory. ("EFB = 00 SAVE" will be displayed for a moment)
10. "EFB = 00 MO-P" will be displayed.
The optical pick-up moves to the pit area automatically and servo is imposed.

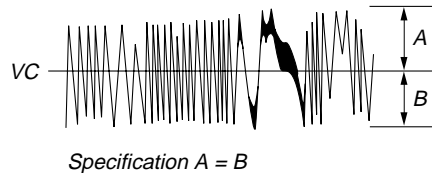
11. Press the **◀◀ "R"** or **▶▶ "R"** button until the waveform of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

Traverse Waveform



12. Press the **ENTER/YES "R"** button, and save the adjustment results in the non-volatile memory. ("EFB = 00 SAVE" will be displayed for a moment)
Next "EF MO ADJUST" (C07) is displayed. The disc stops rotating automatically.
13. Press the **MD ▲** button and take out the disc.
14. Load the check disc (TDYS-1).
15. Press the **◀◀ "R"** or **▶▶ "R"** button to display "EF CD ADJUST" (C08).
16. Press the **ENTER/YES "R"** button to display "EFB = 00 CD".
Servo is imposed automatically.
17. Press the **◀◀ "R"** or **▶▶ "R"** button so that the waveform of the oscilloscope moves closer to the specified value.
In this adjustment, waveform varies at intervals of approx. 2%. Adjust the waveform so that the specified value is satisfied as much as possible.

Traverse Waveform



18. Press the **ENTER/YES "R"** button, display "EFB = 00 SAVE" for a moment and save the adjustment results in the non-volatile memory.
Next "EF CD ADJUST" (C08) will be displayed.
19. Press the **MD ▲** button and take out the check disc.

Adjustment Location: BD (MD) board (see page 44)

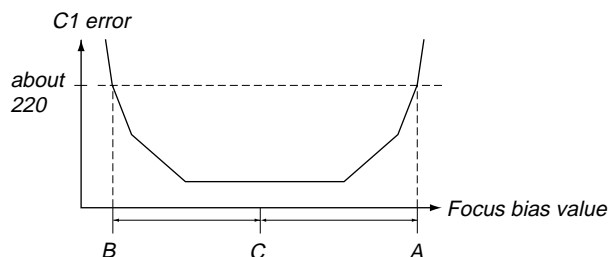
13. FOCUS BIAS ADJUSTMENT

Procedure:

1. Load the continuously-recorded disc. (Refer to “5. USING THE CONTINUOUSLY RECORDED DISC” (See page 37))
 2. Press the **◀◀ “R”** or **▶▶ “R”** button to display “CPLAY 2 MODE” (C36).
 3. Press the **ENTER/YES “R”** button to display “CPLAY 2MID”.
 4. Press the **MENU/NO “R”** button when “C = 0000 = 00” is displayed.
 5. Press the **◀◀ “R”** or **▶▶ “R”** button to display “FBIAS ADJUST” (C09).
 6. Press the **ENTER/YES “R”** button to display “0000/00 a = 00 T”.
- The first four digits indicate the C1 error rate, the two digits after “/” indicate ADER, and the 2 digits after “a =” indicate the focus bias value.
7. Press the **▶▶ “R”** button and find the focus bias value at which the C1 error rate becomes about 220 (refer to Note 2).
 8. Press the **ENTER/YES “R”** button to display “0000/00 b = 00 T”.
 9. Press the **◀◀ “R”** button and find the focus bias value at which the C1 error rate becomes about 220.
 10. Press the **ENTER/YES “R”** button to display “0000/00 c = 00 T”.
 11. Check that the C1 error rate is below 20 and ADER is 00. Then press the **ENTER/YES “R”** button.
 12. If the “(00)” in “00 - 00 - 00 (00)” is above 20, press the **ENTER/YES “R”** button.
- If below 20, press the **MENU/NO “R”** button and repeat the adjustment from step 2.
13. Press the **MD ▲** button and take out the disc.

Note 1: The relation between the C1 error and focus bias is as shown in the following figure. Find points A and B in the following figure using the above adjustment. The focal point position C is automatically calculated from points A and B.

Note 2: As the C1 error rate changes, perform the adjustment using the average value.



14. ERROR RATE CHECK

14-1. CD Error Rate Check

Procedure:

1. Load the check disc (TDYS-1).
2. Press the **◀◀ “R”** or **▶▶ “R”** button and display “CPLAY 2 MODE” (C36).
3. Press the **ENTER/YES “R”** button and display “CPLAY 2 MID”.
4. The display changes to “C = 0000 AD = 00”.
5. Check that the C1 error rate is below 20.
6. Press the **MENU/NO “R”** button to stop playback, then press the **MD ▲** button and take out the check disc.

14-2. MO Error Rate Check

Procedure:

1. Load the continuously-recorded disc. (Refer to “5. USING THE CONTINUOUSLY RECORDED DISC” (See page 37))
2. Press the **◀◀ “R”** or **▶▶ “R”** button to display “CPLAY 2 MODE” (C36).
3. Press the **ENTER/YES “R”** button to display “CPLAY 2MID”.
4. The display changes to “C1 = 0000 AD = 00”.
5. If the C1 error rate is below 20, check that ADER is 00.
6. Press the **MENU/NO “R”** button to stop playback, then press the **MD ▲** button and take out the disc.

15. FOCUS BIAS CHECK

Change the focus bias and check the focus tolerance amount.

Procedure:

1. Load the continuously-recorded disc. (Refer to “5. USING THE CONTINUOUSLY RECORDED DISC” (See page 37))
 2. Press the **◀◀ “R”** or **▶▶ “R”** button to display “CPLAY 2 MODE” (C36).
 3. Press the **ENTER/YES “R”** button twice to display “CPLAY 2 MID”.
 4. Press the **MENU/NO “R”** button when “C1 = 0000 AD = 00” is displayed.
 5. Press the **◀◀ “R”** or **▶▶ “R”** button to display “FBIAS CHECK” (C16).
 6. Press the **ENTER/YES “R”** button to display “0000/00 c = 00”.
- The first four digits indicate the C1 error rate, the two digits after “/” indicate ADER, and the 2 digits after “c =” indicate the focus bias value.
- Check that the C1 error is below 20 and ADER is below 2.
7. Press the **ENTER/YES “R”** button and display “0000/00 b = 00”.
- Check that the C1 error is about 100 and ADER is below 2.
8. Press the **ENTER/YES “R”** button and display “0000/00 a = 00”.
- Check that the C1 error is about 100 and ADER is below 2
9. Press the **MENU/NO “R”** button, then press the **MD ▲** button and take out the disc.

Note: If the C1 error and ADER are above other than the specified value at points a (step 8. in the above) or b (step 7. in the above), the focus bias adjustment may not have been carried out properly. Adjust from the beginning again.





16. AUTO GAIN CONTROL OUTPUT LEVEL ADJUSTMENT

Be sure to perform this adjustment when the optical pick-up is replaced.

If the adjustment results becomes “Adjust NG!”, the optical pick-up may be faulty or the servo system circuits may be abnormal.





16-1. CD Auto Gain Control Output Level Adjustment

Procedure:

1. Load the check disc (TDYS-1).
2. Press the  “R” or  “R” button to display “AG Set (CD)” (C11).
3. When the  “R” button is pressed, the adjustment will be performed automatically.
“Complete!” will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to “AG Set (CD)” (C11).
4. Press the  button and take out the check disc.

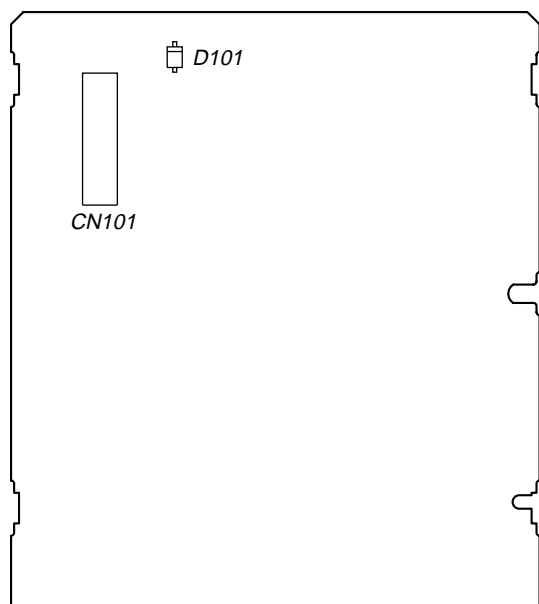
16-2. MO Auto Gain Control Output Level Adjustment

Procedure:

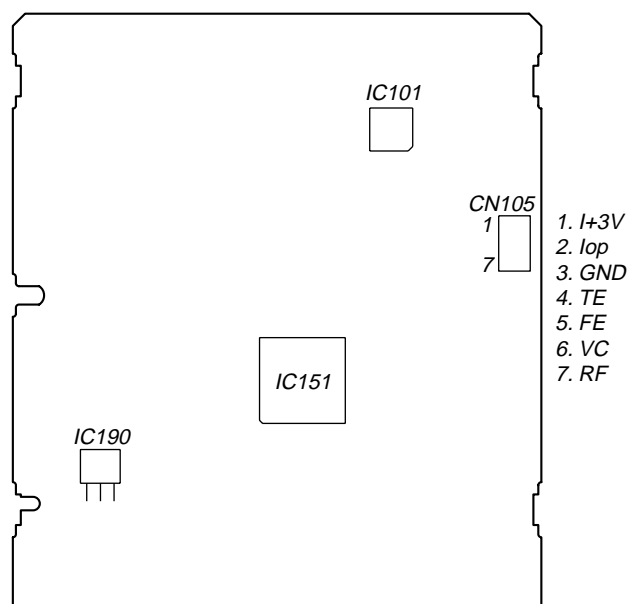
1. Load the test disc (MDW-74/GA-1).
2. Press the  “R” or  “R” button to display “AG Set (MO)” (C10).
3. When the  “R” button is pressed, the adjustment will be performed automatically.
“Complete!” will then be displayed momentarily when the value is recorded in the non-volatile memory, after which the display changes to “AG Set (MO)” (C10).
4. Press the  button and take out the test disc.

Adjustment and checking Location:

– BD (MD) BOARD (Component Side) –



– BD (MD) BOARD (Conductor Side) –



Note: It is useful to use the jig for checking the waveform. (Refer to Servicing Notes on page 6)

SECTION 6
DIAGRAMS

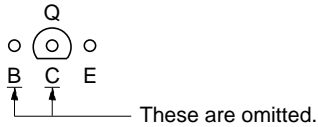
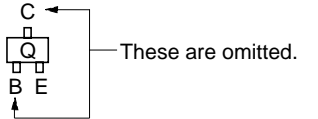
6-1. Note For Printed Wiring Boards and Schematic Diagrams
(In addition to this, the necessary note is printed in each block)

Note on Printed Wiring Boards:

- : parts extracted from the component side.
- : Through hole.
- : parts extracted from the conductor side.
- Pattern from the side which enables seeing.

(The other layers' patterns are not indicated.)

- Indication of transistor.



- Abbreviation
KR : Korean model

Note on Schematic Diagram:

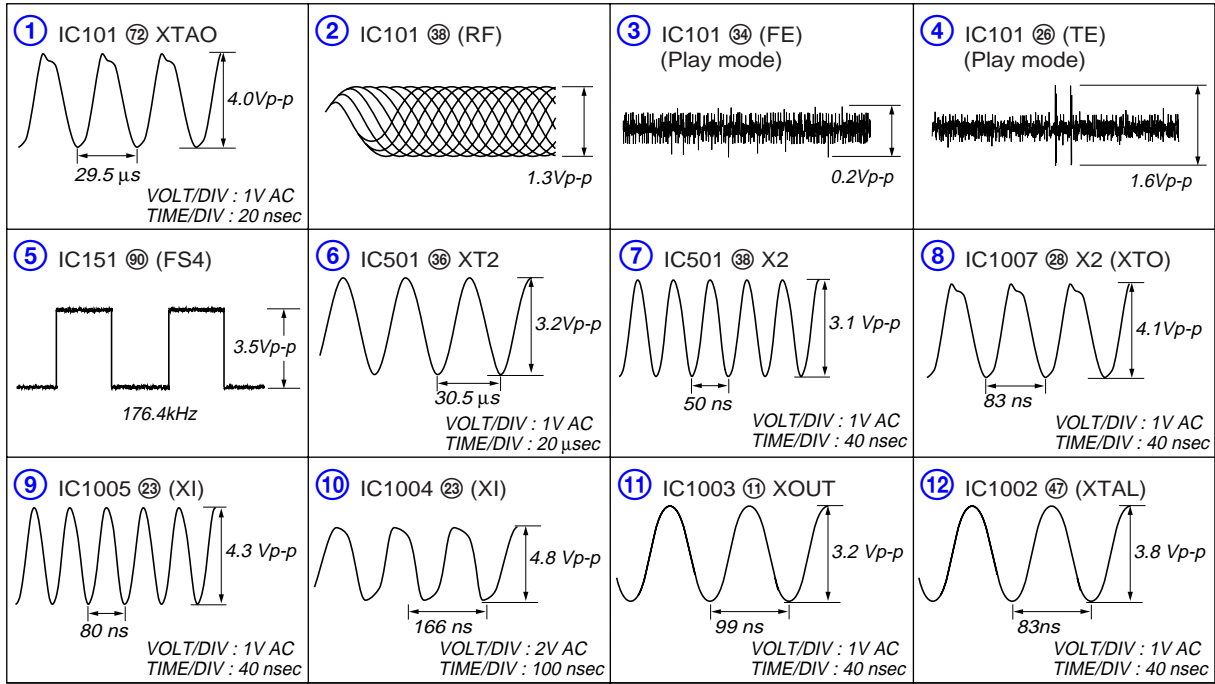
- All capacitors are in μF unless otherwise noted. pF: μpF 50 V or less are not indicated except for electrolytics and tantalums.
- All resistors are in Ω and $\frac{1}{4}\text{W}$ or less unless otherwise specified.
- Δ : internal component.
- $\text{---}\text{---}\text{---}$: fusible resistor.
- $\text{---}\text{---}\text{---}$: panel designation.
- $\text{---}\text{---}\text{---}$: B+ Line.
- $\text{---}\text{---}\text{---}$: B- Line.

Note: The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

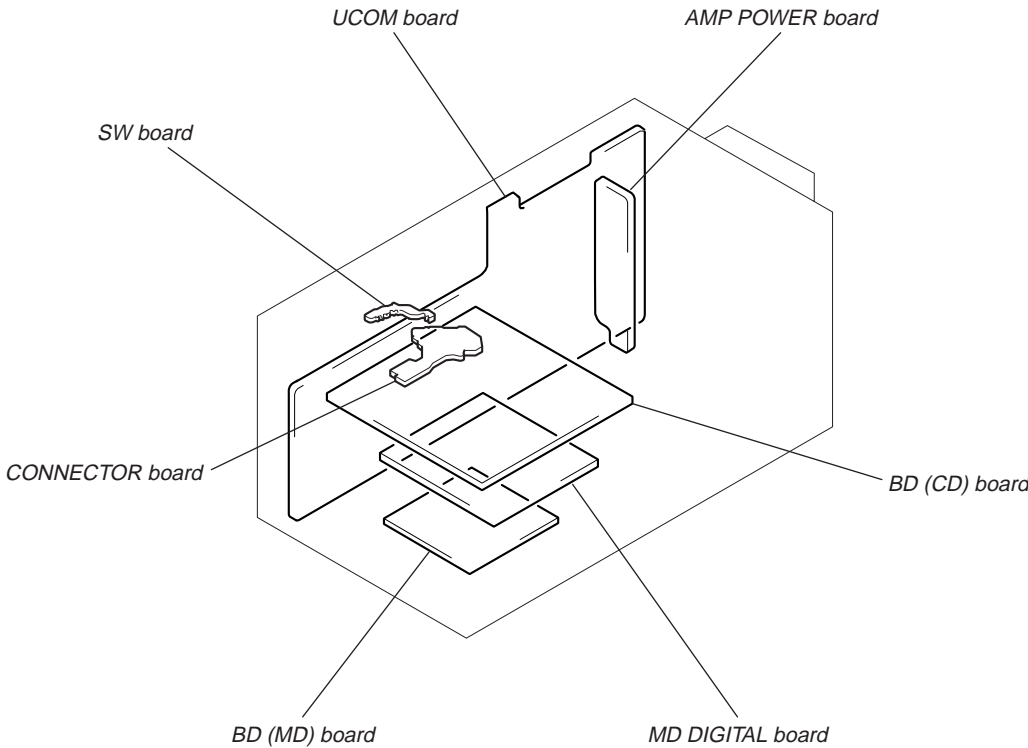
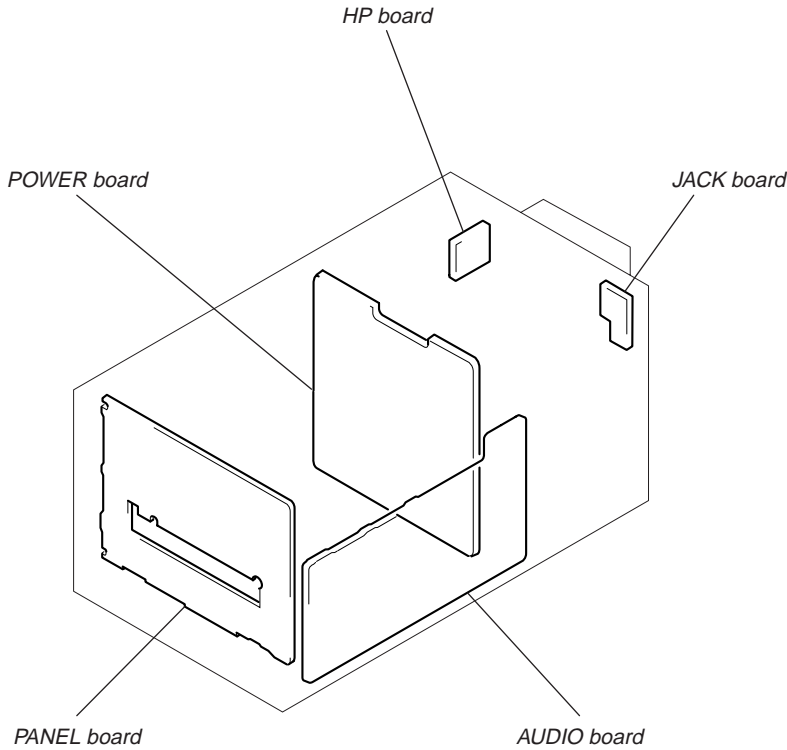
- Voltages are taken with a VOM (Input impedance 10 M Ω). Voltage variations may be noted due to normal production tolerances.
- Waveforms are taken with a oscilloscope. Voltage variations may be noted due to normal production tolerances.
- Circled numbers refer to waveforms.
- Signal path.
 - \Rightarrow : FM
 - \Rightarrow : CD (ANALOG)
 - \Rightarrow : CD (DIGITAL)
 - \Rightarrow : PB (MD)
 - \Rightarrow : REC (MD)
 - \Rightarrow : DIGITAL IN (OPTICAL)
 - \Rightarrow : PB (TAPE)
 - \Rightarrow : REC (TAPE)
 - \Rightarrow : USB

- Abbreviation
KR : Korean model

Waveforms



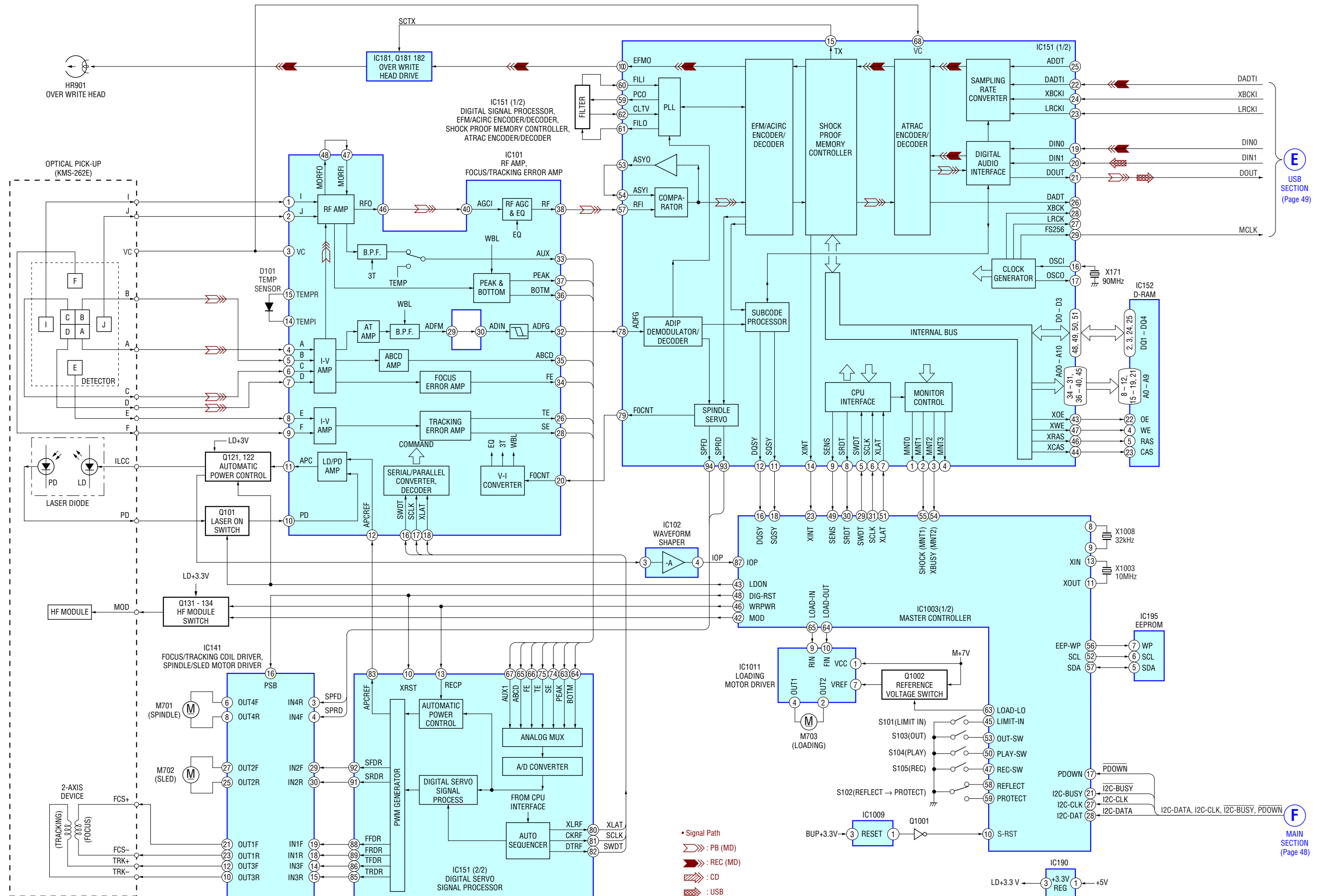
Circuit Boards Location



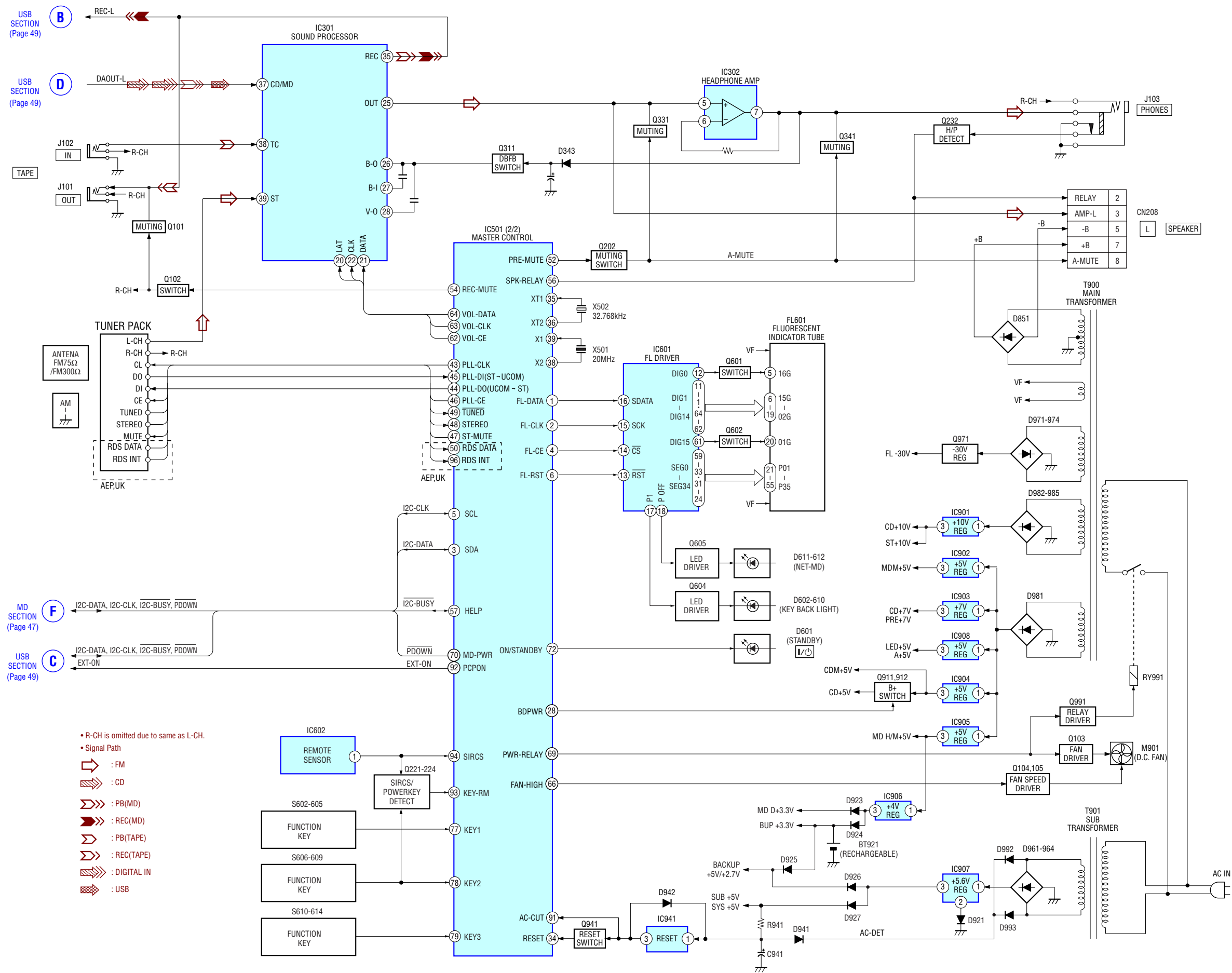
6-2. Block Diagram – CD Servo Section –



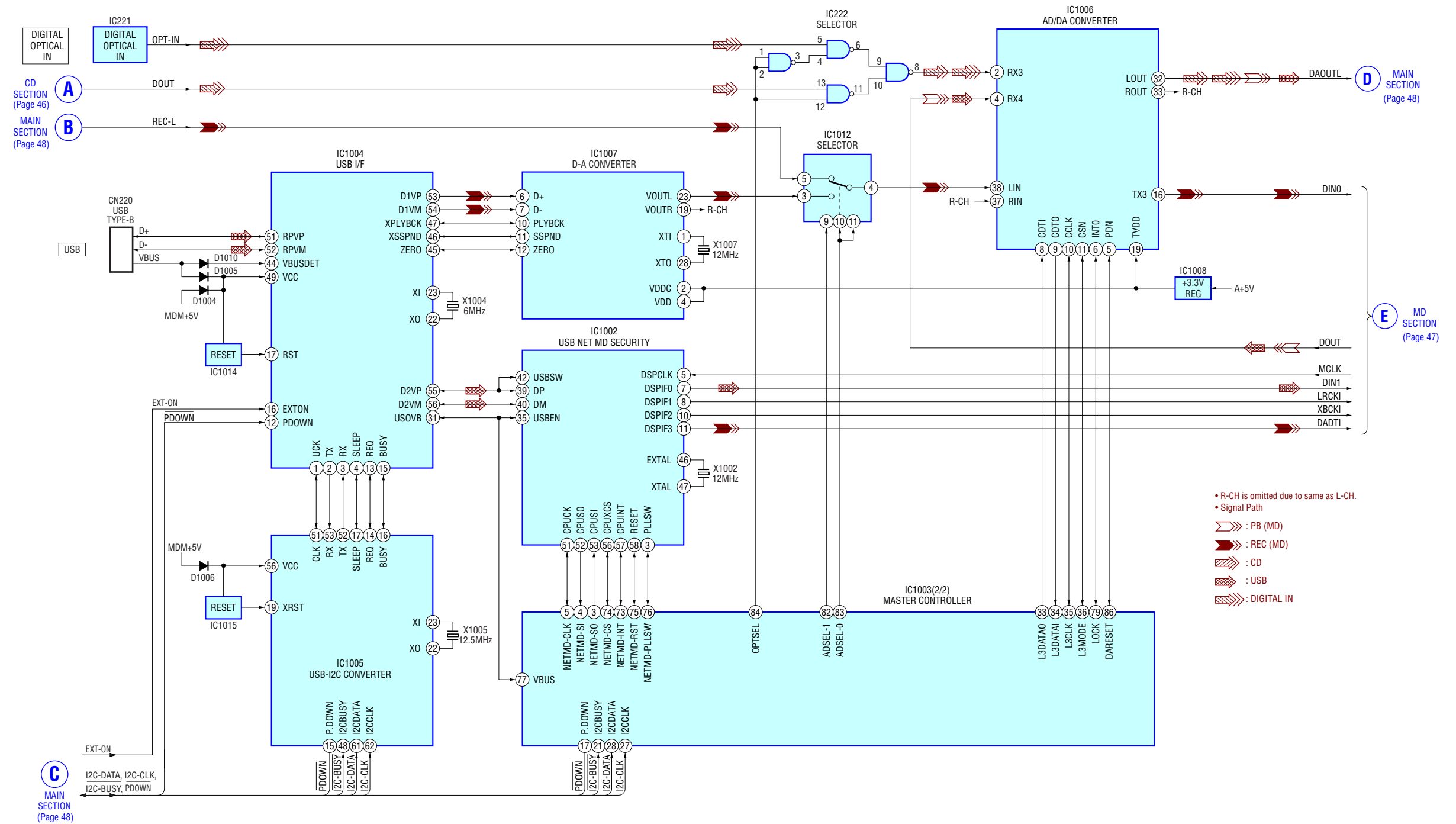
6-3. Block Diagram – MD Servo Section –



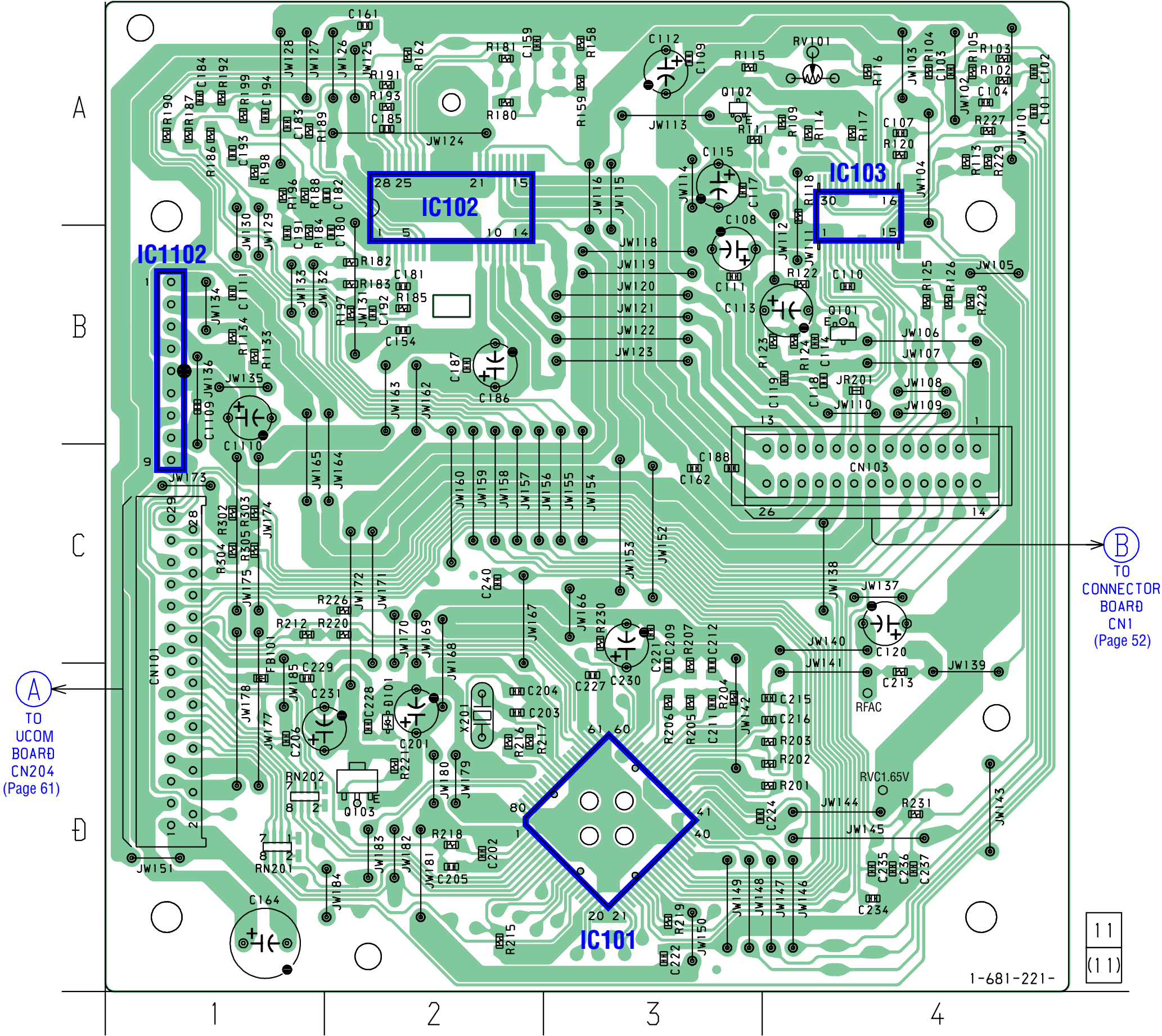
6-4. Block Diagram – Main Section –



6-5. Block Diagram – USB section –



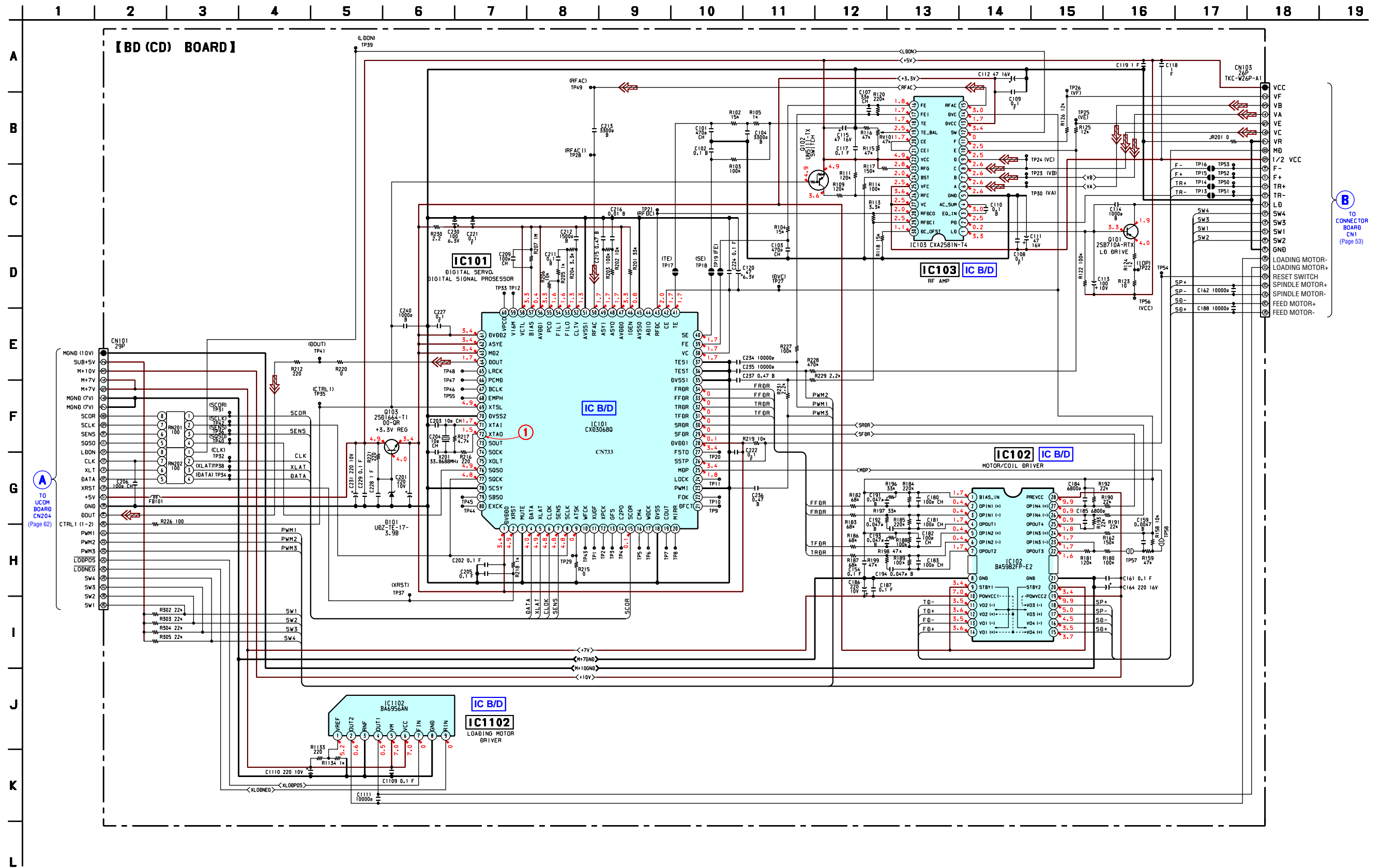
BD (CD) BOARD

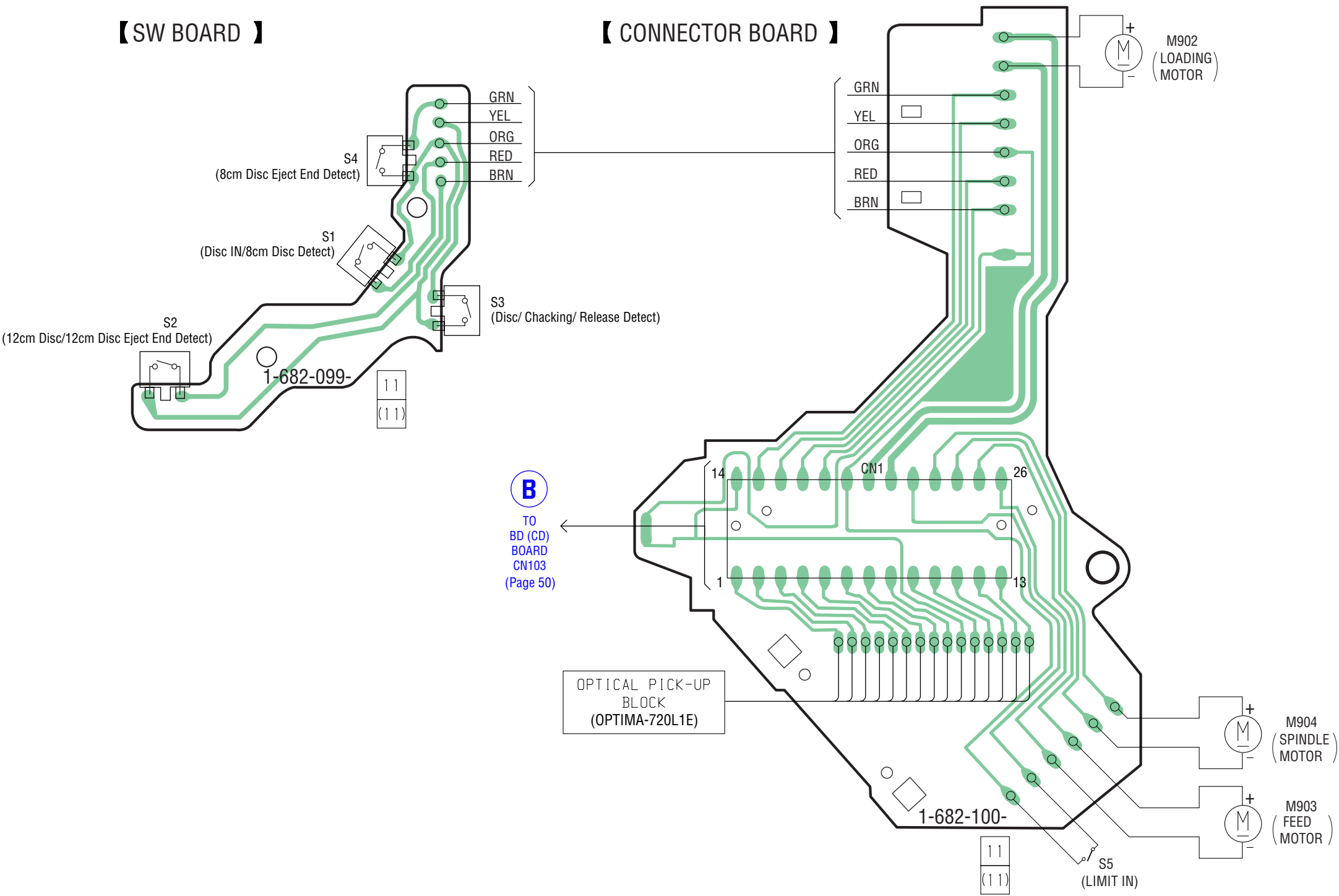


• Semiconductor Location

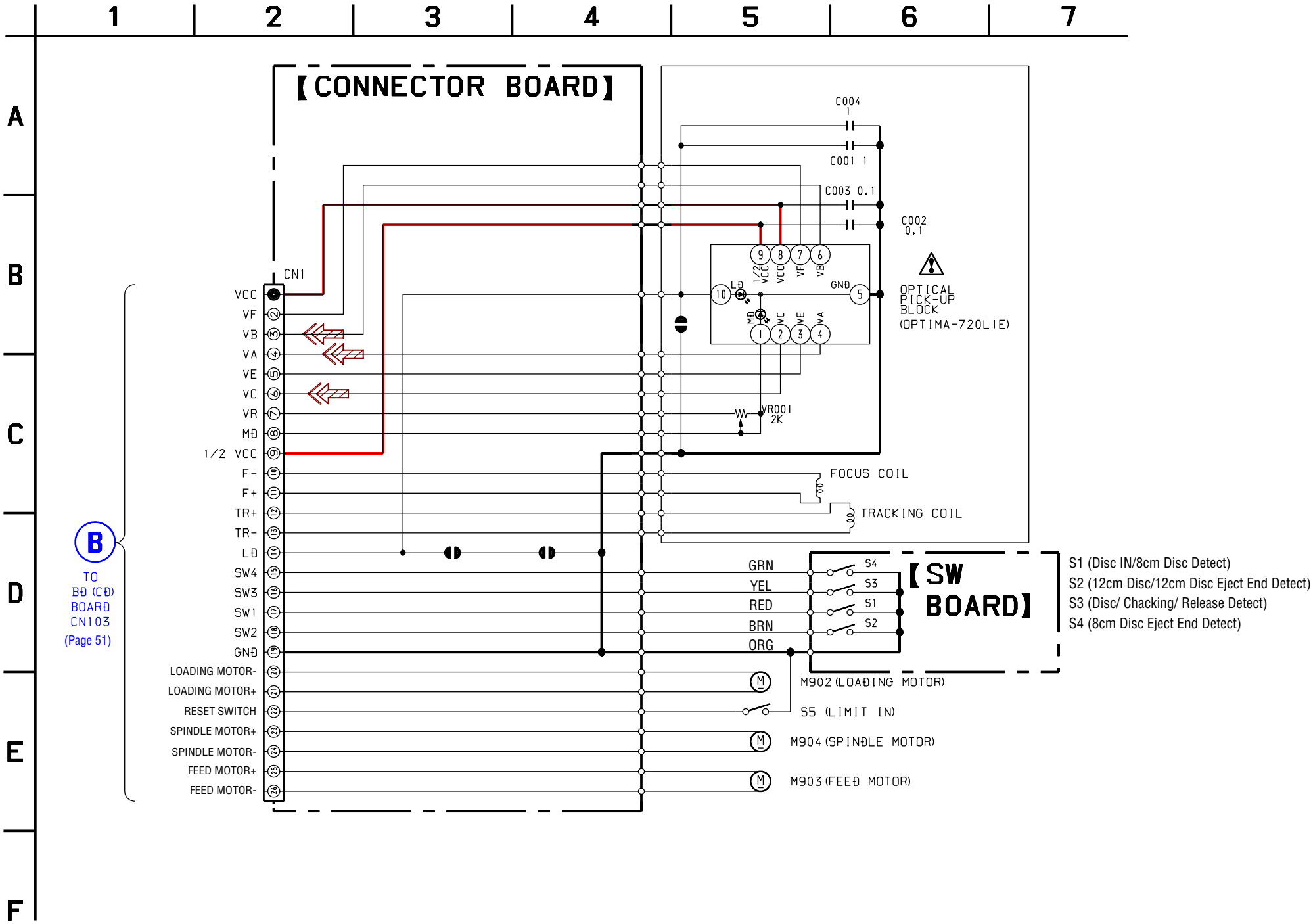
Ref. No.	Location
D101	D-2
IC101	D-3
IC102	A-2
IC103	A-4
IC1102	B-1
Q101	B-4
Q102	A-3
Q103	D-2

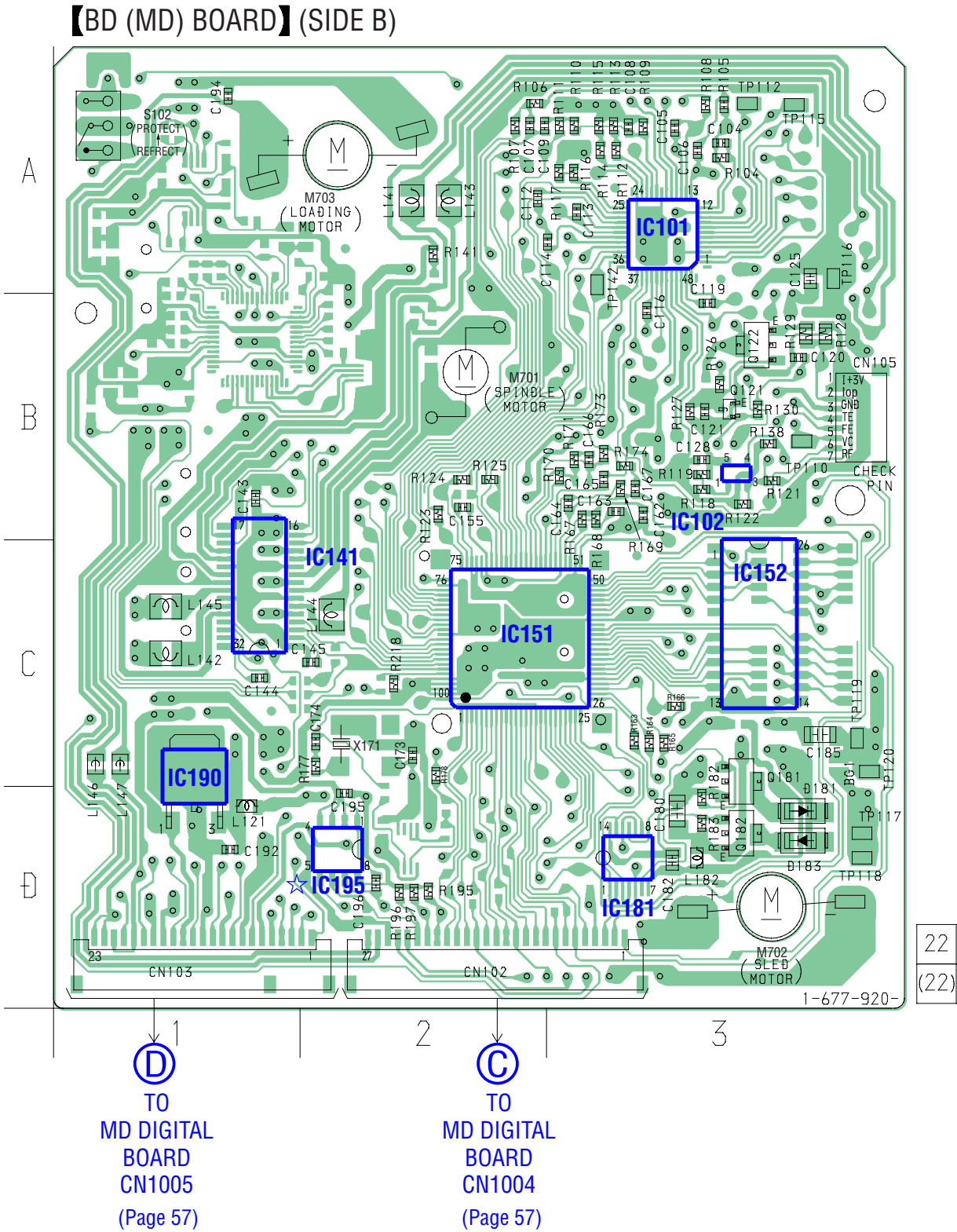
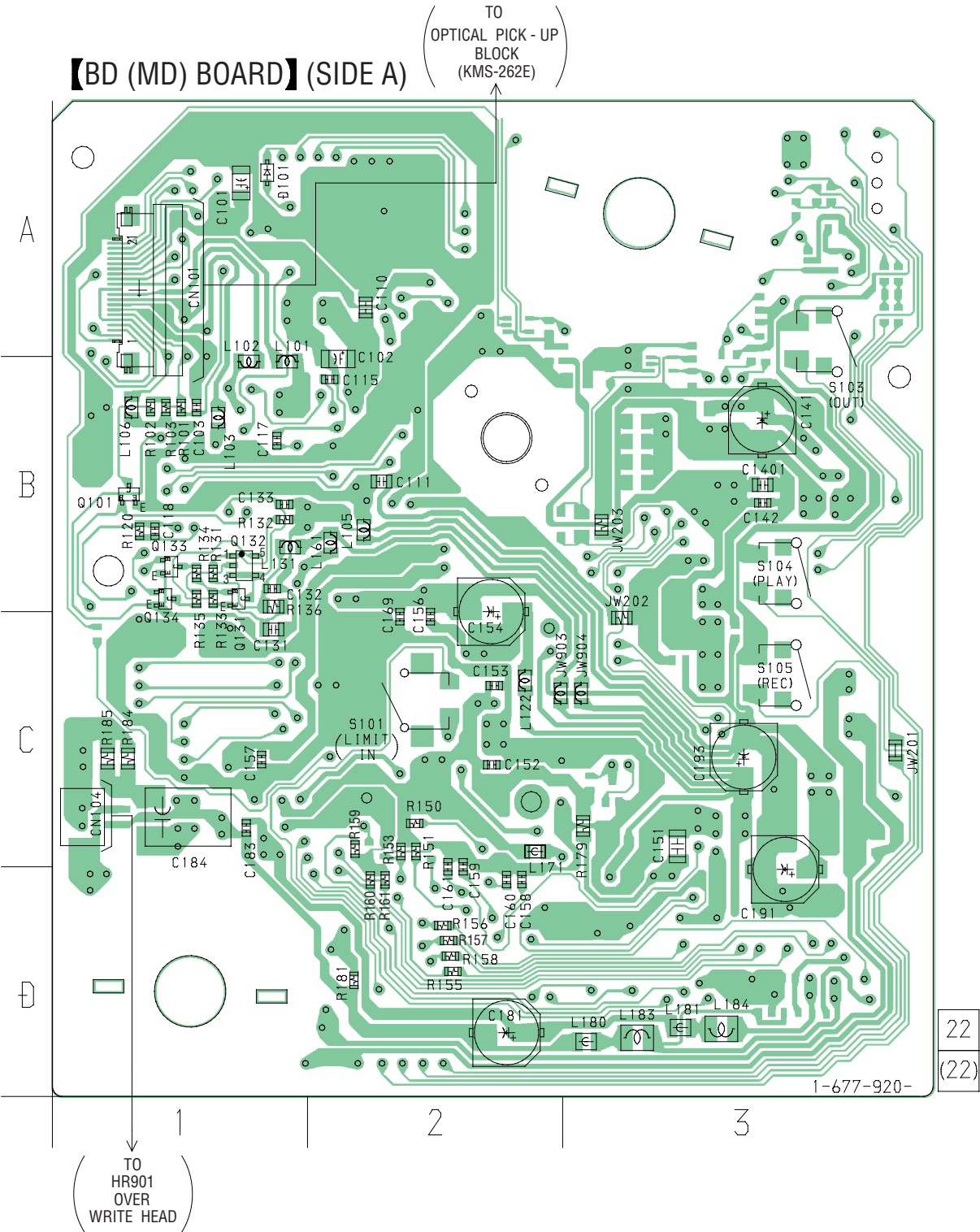
6-7. Schematic Diagram – BD (CD) Board – • See page 45 for Waveforms. • See page 70 for IC Block Diagrams.





6-9. Schematic Diagram – Connector Section –





• Semiconductor
Location
Side A

Ref. No.	Location
D101	A-1
Q101	B-1
Q131	B-1
Q132	B-1
Q133	B-1
Q134	B-1

• Semiconductor
Location
Side B

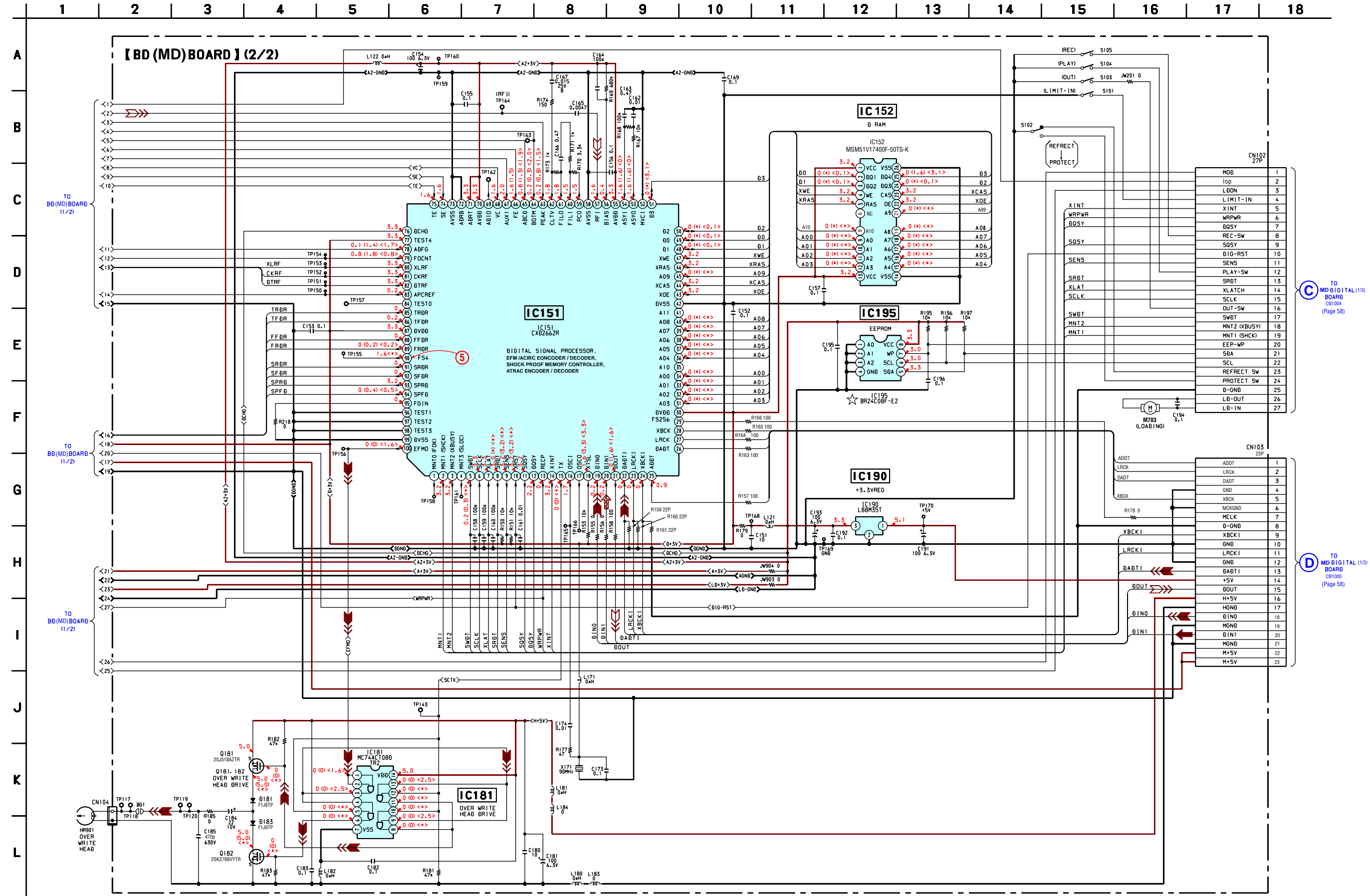
Ref. No.	Location
D181	D-3
D183	D-3
IC101	A-3
IC102	B-3
IC141	C-1
IC151	C-2
IC153	C-3
IC181	D-3
IC190	D-1
IC195	D-2
Q121	B-3
Q122	B-3
Q181	C-3
Q182	D-3

☆ IC195 is a written in and settled EEPROM. Supply with a single article has not been carried out. In case you exchange by BD board (A-4726-972-A), please put on IC195 currently used with the model again.

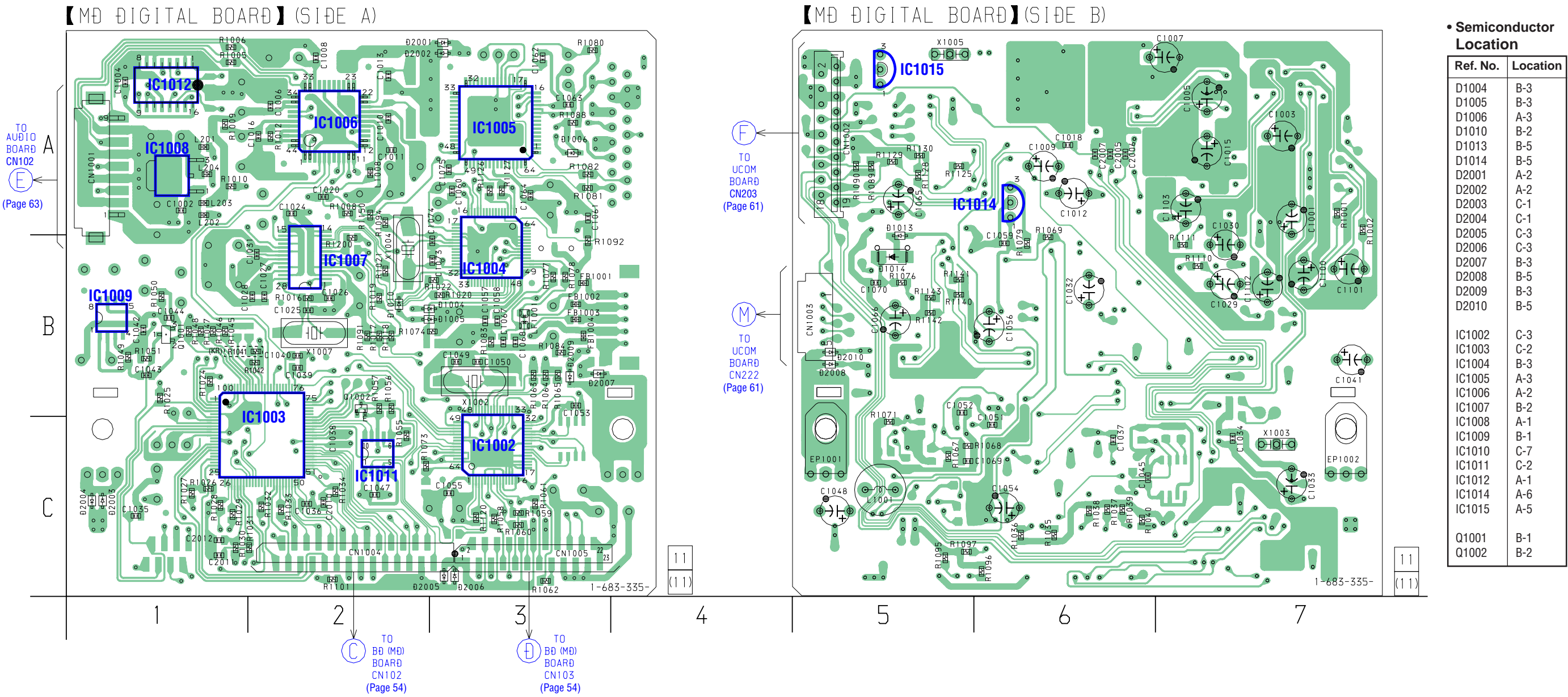


6-12. Schematic Diagram – BD (MD) Board (2/2) – • See page 45 for Waveforms. • See page 75 for IC Pin Function Description.

☆ IC195 is a written in and settled EEPROM. Supply with a single article has not been carried out. In case you exchange by BD board (A-4726-972-A), please put on IC195 currently used with the model again.



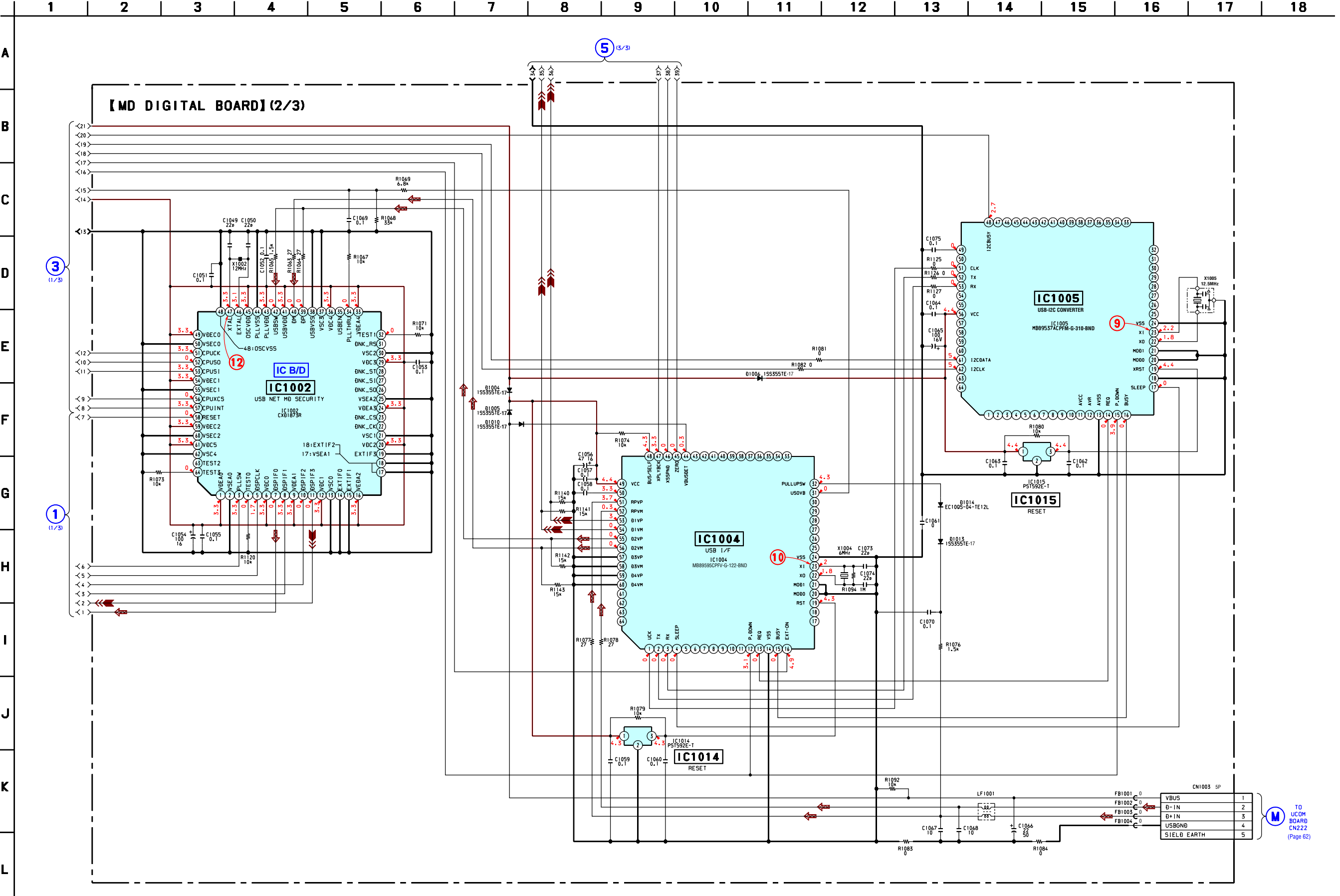
6-13. Printed Wiring Board – MD DIGITAL Board – • See page 45 for Circuit Boards Location.



6-14. Schematic Diagram – MD DIGITAL Board (1/3) – • See page 45 for Waveforms. • See page 78 for IC Pin Function Description.

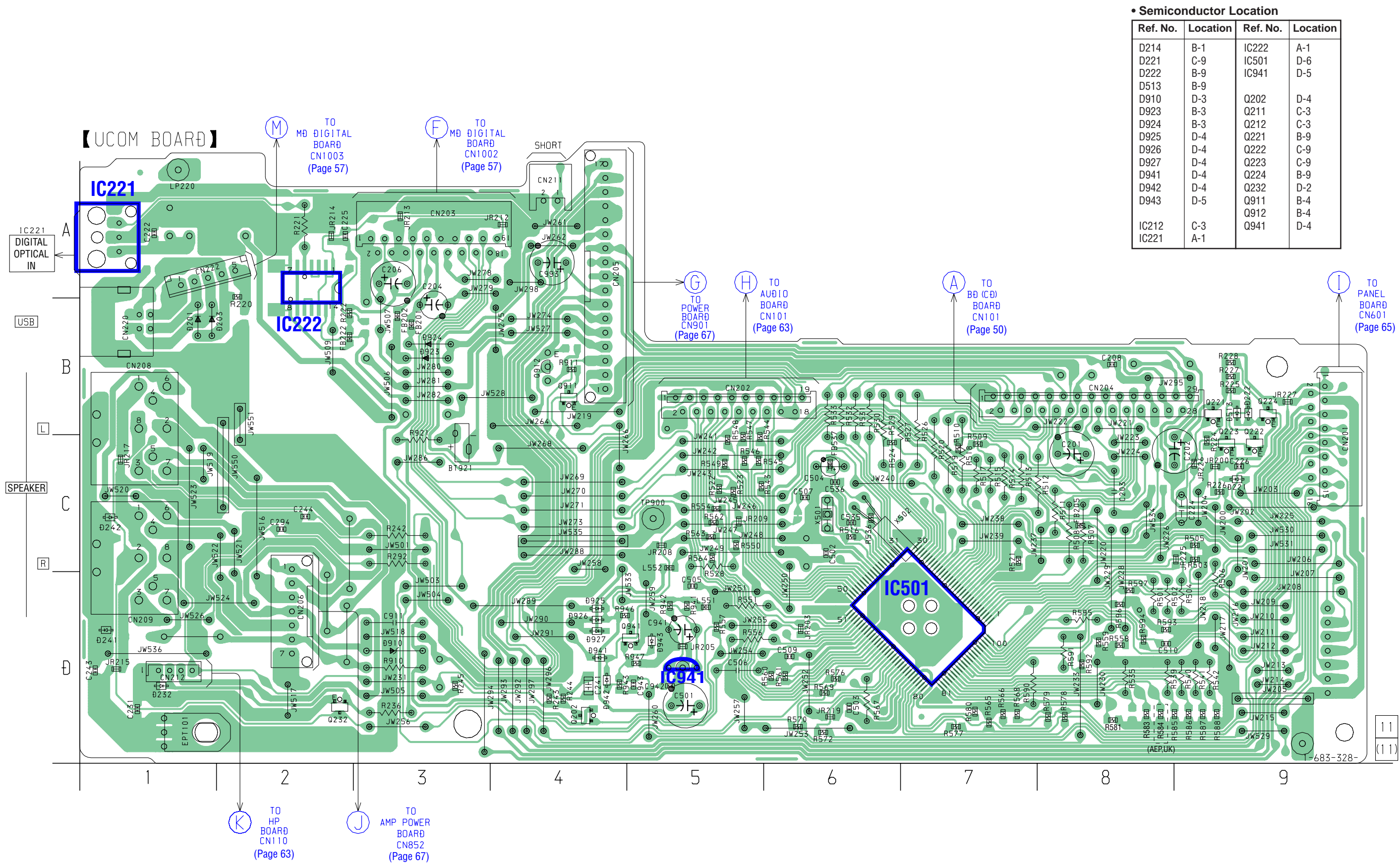


6-15. Schematic Diagram – MD DIGITAL Board (2/3) – • See page 45 for Waveforms. • See page 72 for IC Block Diagrams.





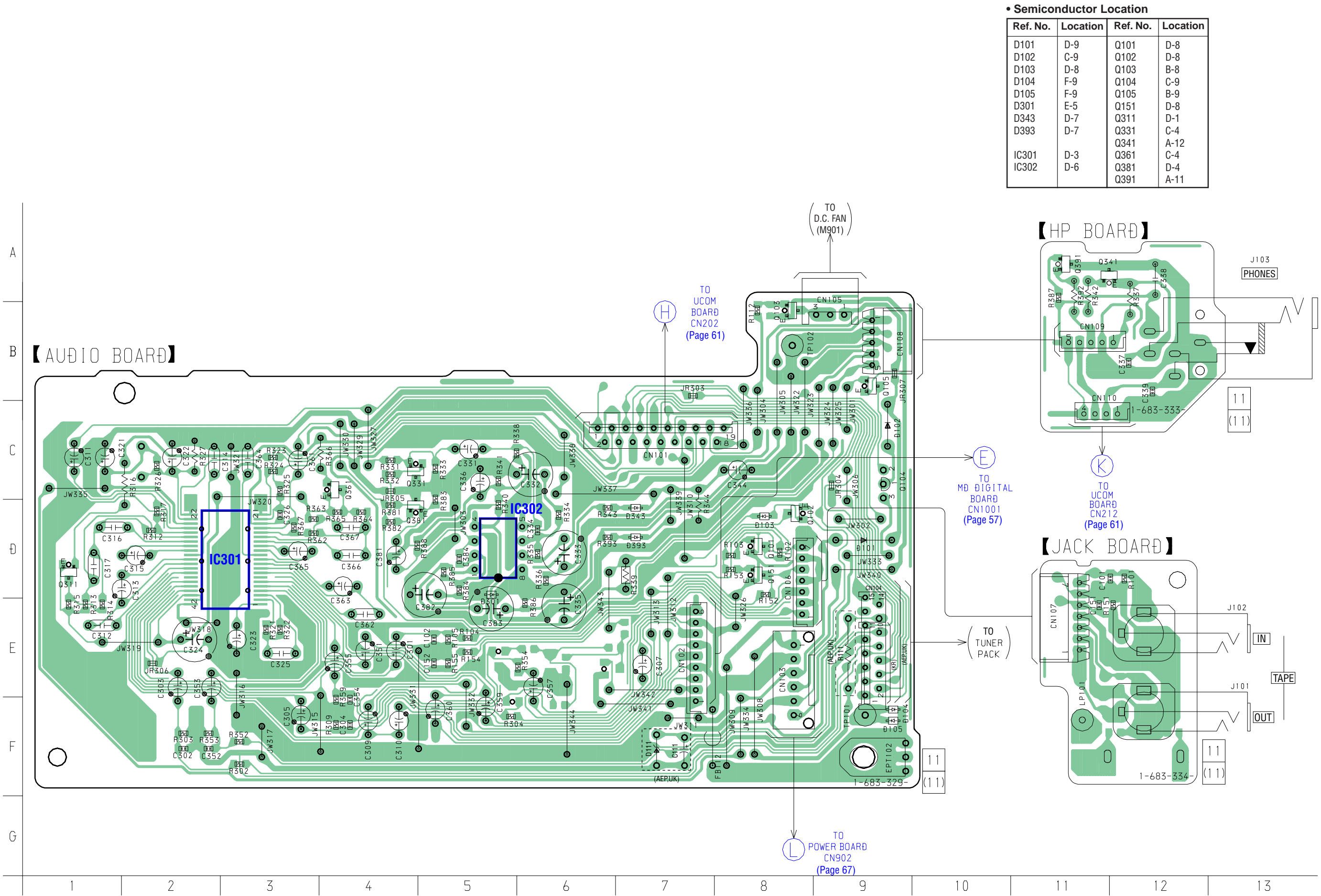
6-17. Printed Wiring Board – UCOM Board – • See page 45 for Circuit Boards Location.



6-18. Schematic Diagram – UCOM Board – • See page 45 for Waveforms. • See page 80 for IC Pin Function Description.

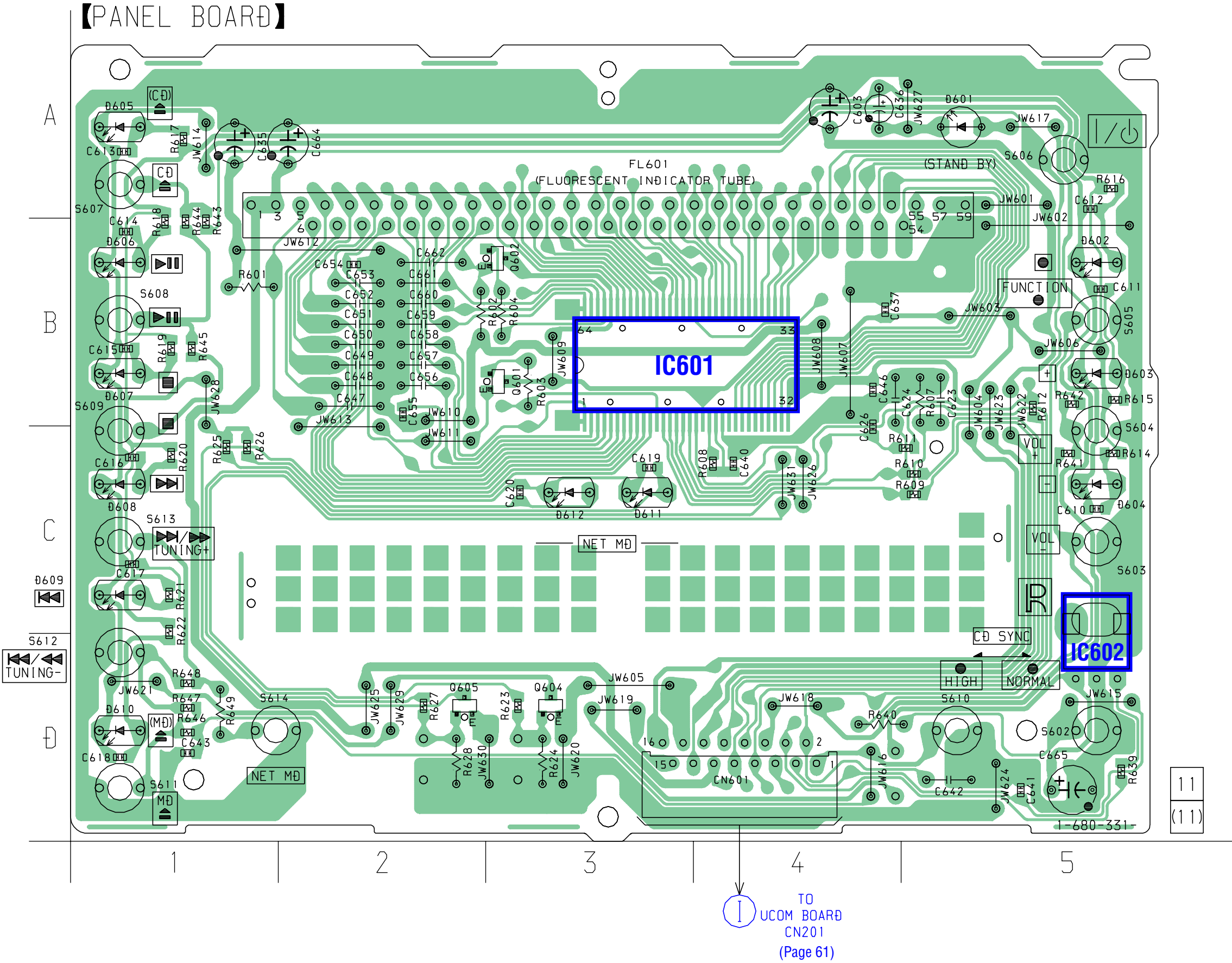


6-19. Printed Wiring Boards – Audio Section – • See page 45 for Circuit Boards Location.





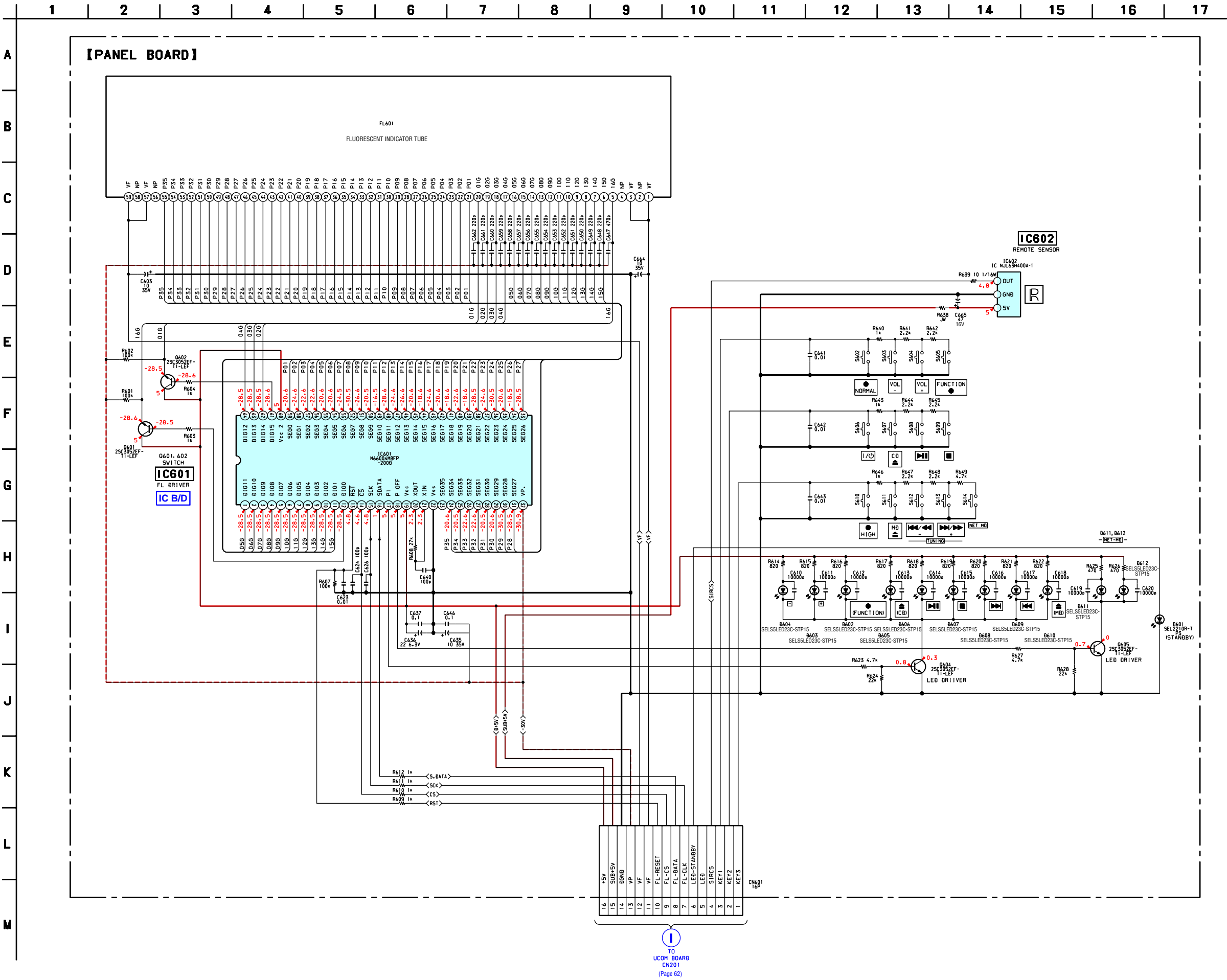
6-21. Printed Wiring Board – PANEL Board – • See page 45 for Circuit Boards Location.



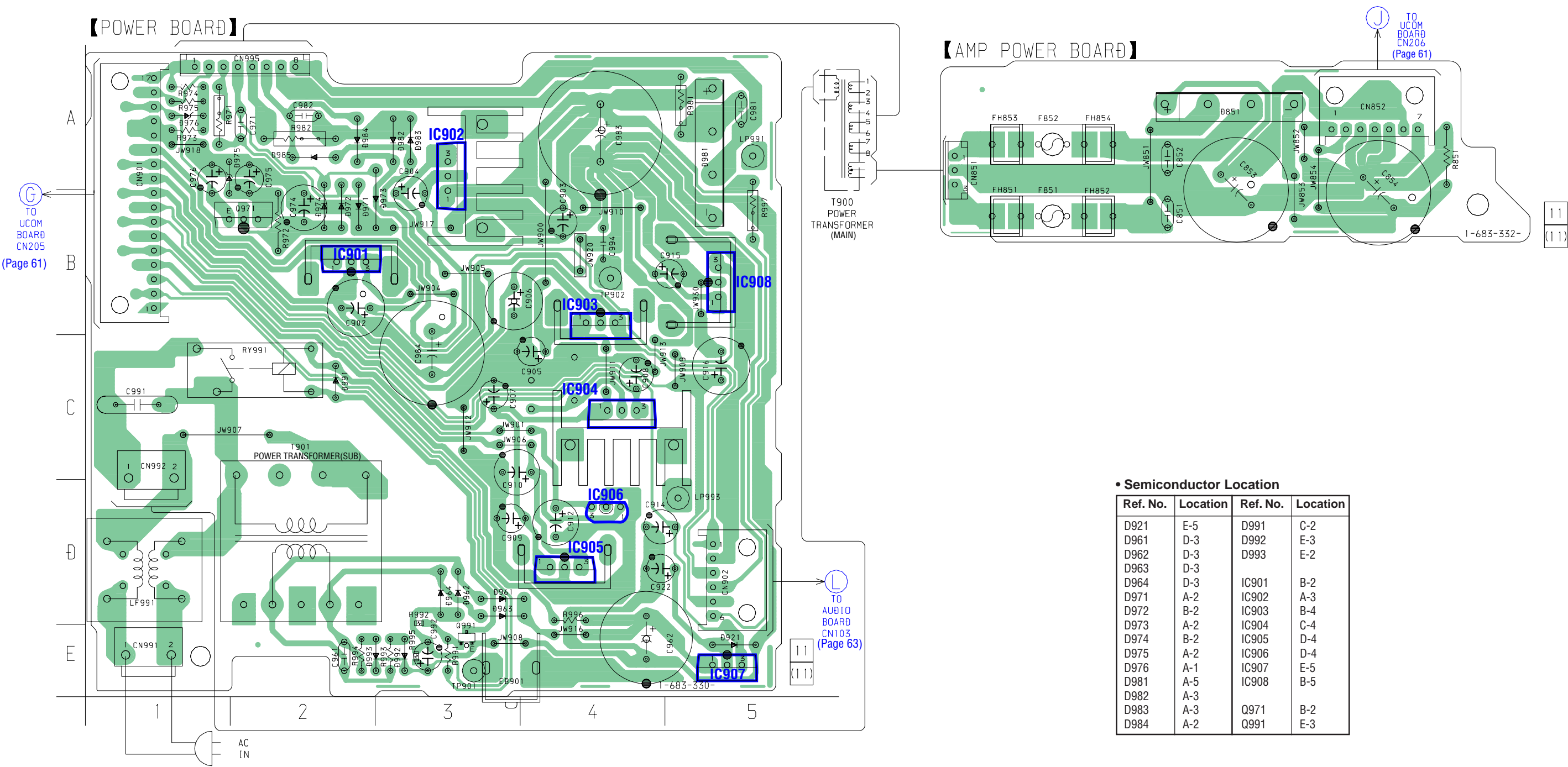
• Semiconductor Location

Ref. No.	Location
D601	A-5
D602	B-5
D603	B-5
D604	C-5
D605	A-1
D606	B-1
D607	B-1
D608	C-1
D609	C-1
D610	D-1
D611	C-3
D612	C-3
IC601	B-3
IC602	C-5
Q601	C-3
Q602	B-3
Q604	D-3
Q605	D-2

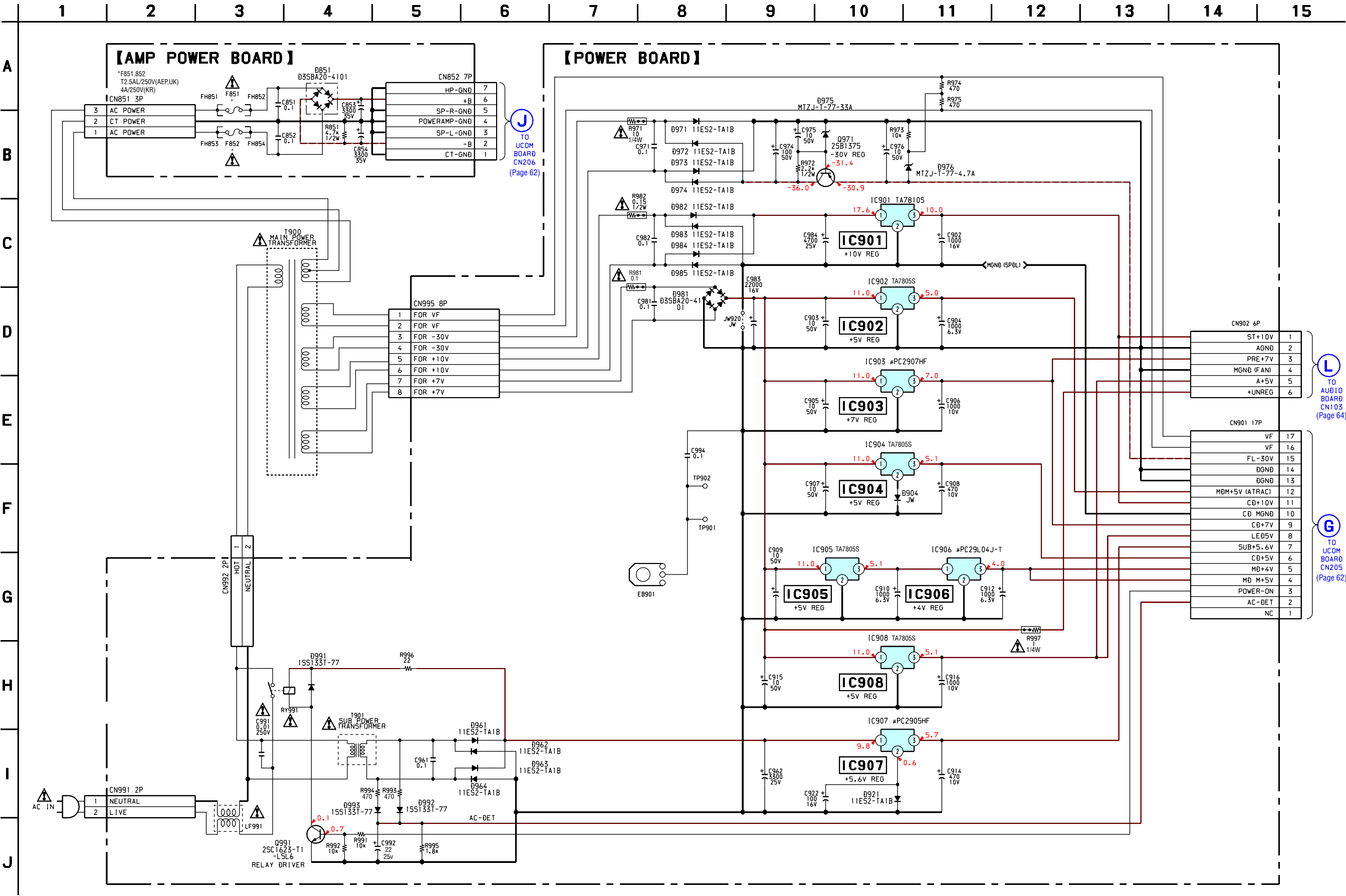
6-22. Schematic Diagram – PANEL Board – • See page 71 for IC Block Diagrams.



6-23. Printed Wiring Boards – Power Section – • See page 45 for Circuit Boards Location.

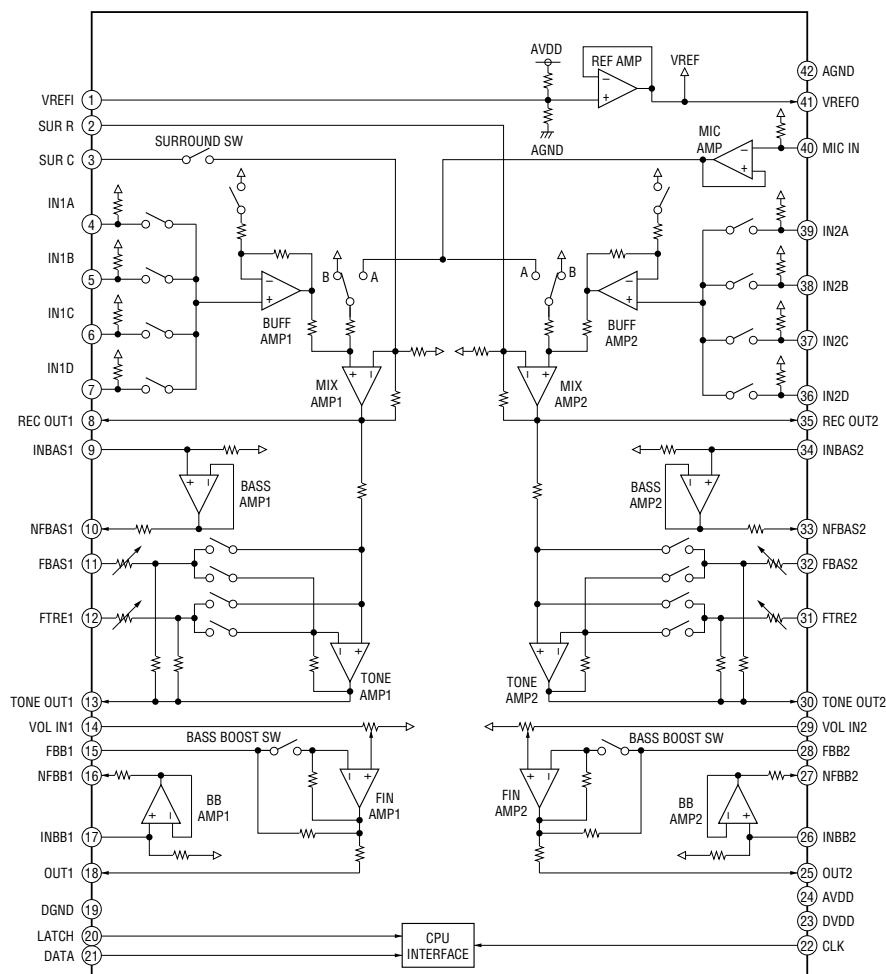


6-24. Schematic Diagram – Power Section –

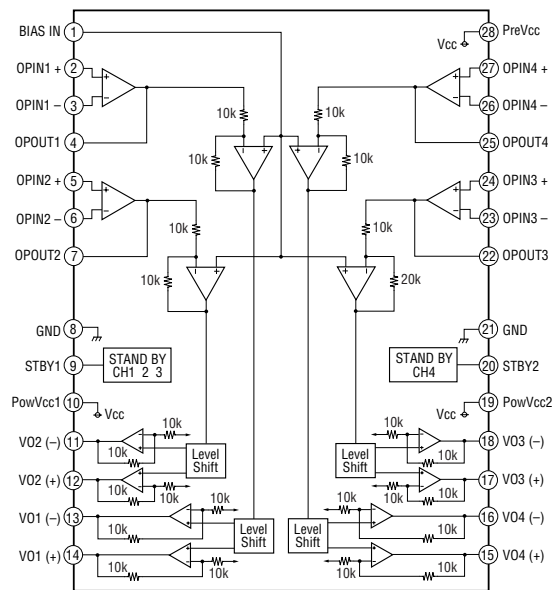


6-25. IC Block Diagrams

IC301 M62428AFP600C (AUDIO BOARD)

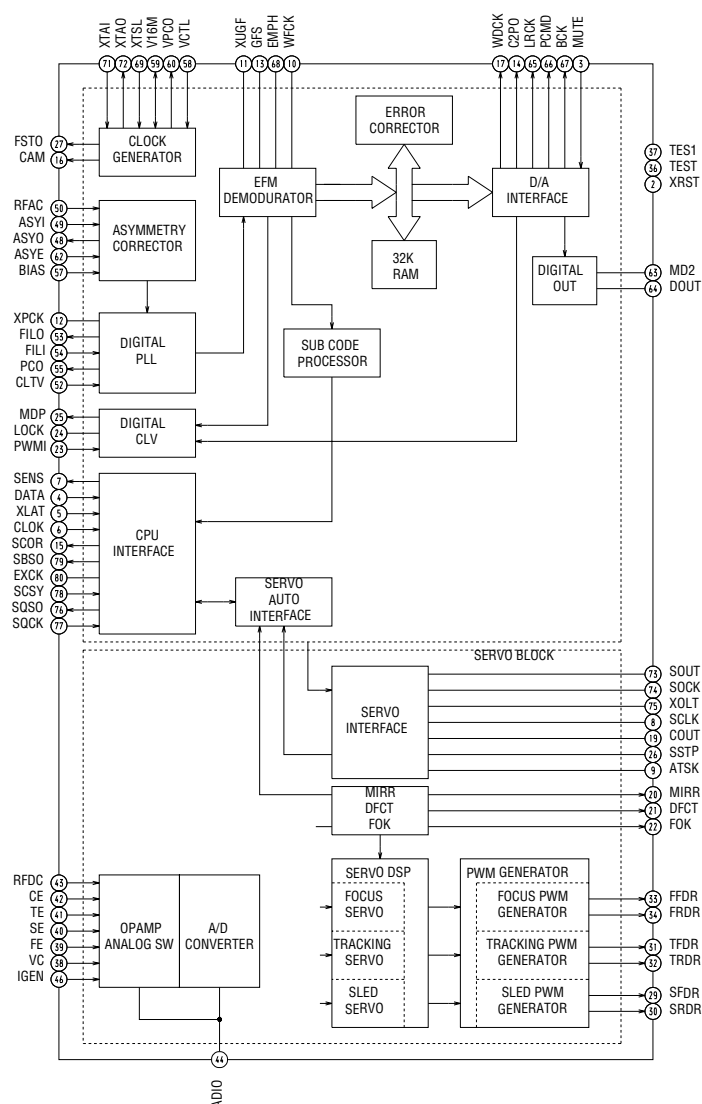


IC102 BA5982FP-E2 (BD (CD) BOARD)

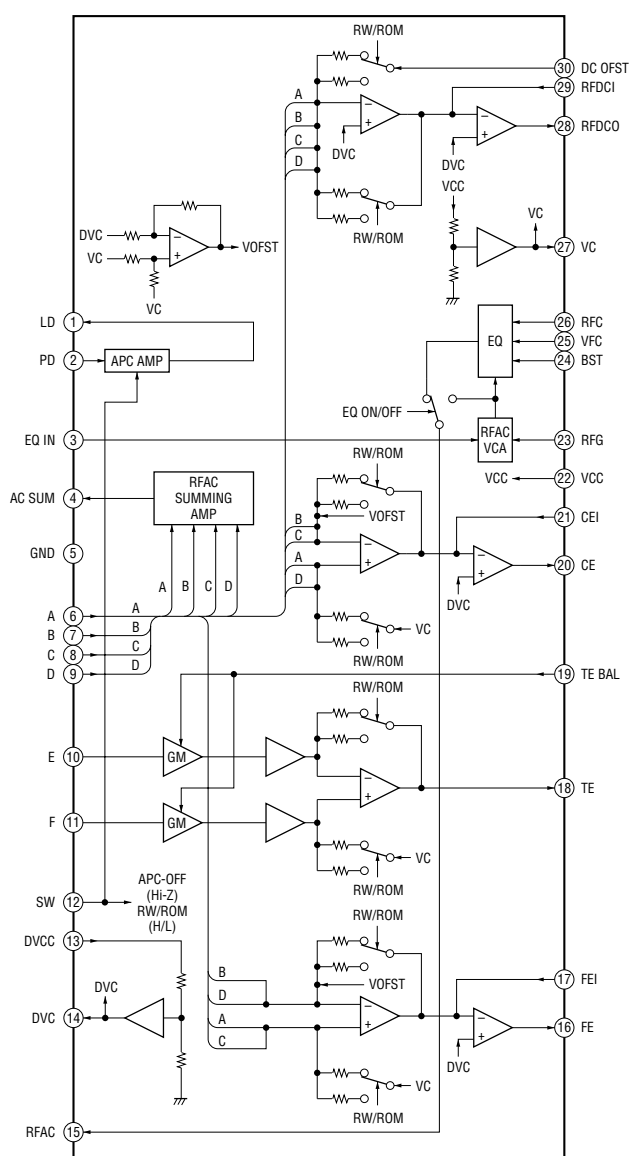


HCD-C7NT

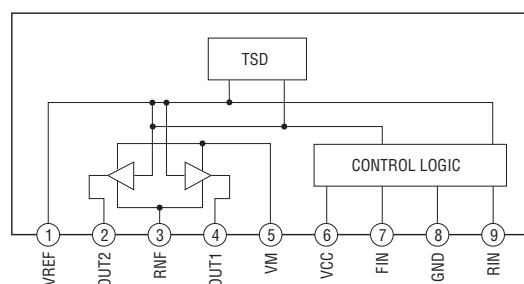
IC101 CXD3068Q (BD (CD) BOARD)



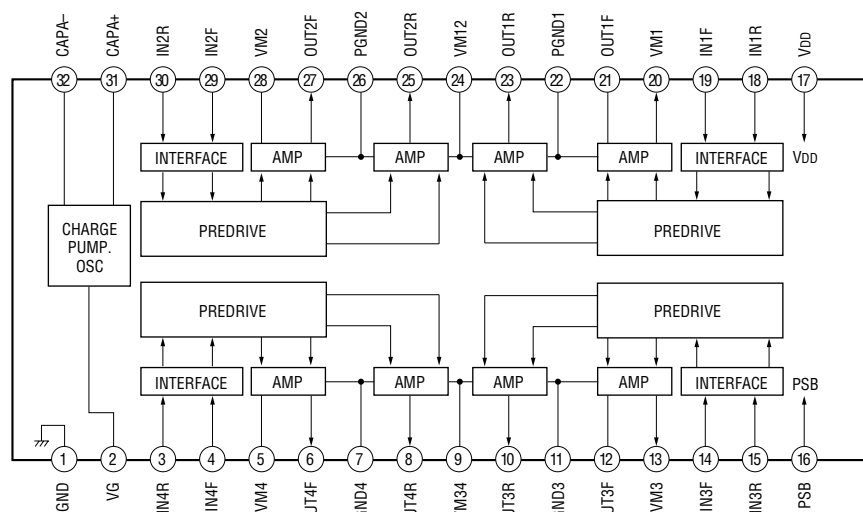
IC103 CXA2581N-T4 (BD (CD) BOARD)



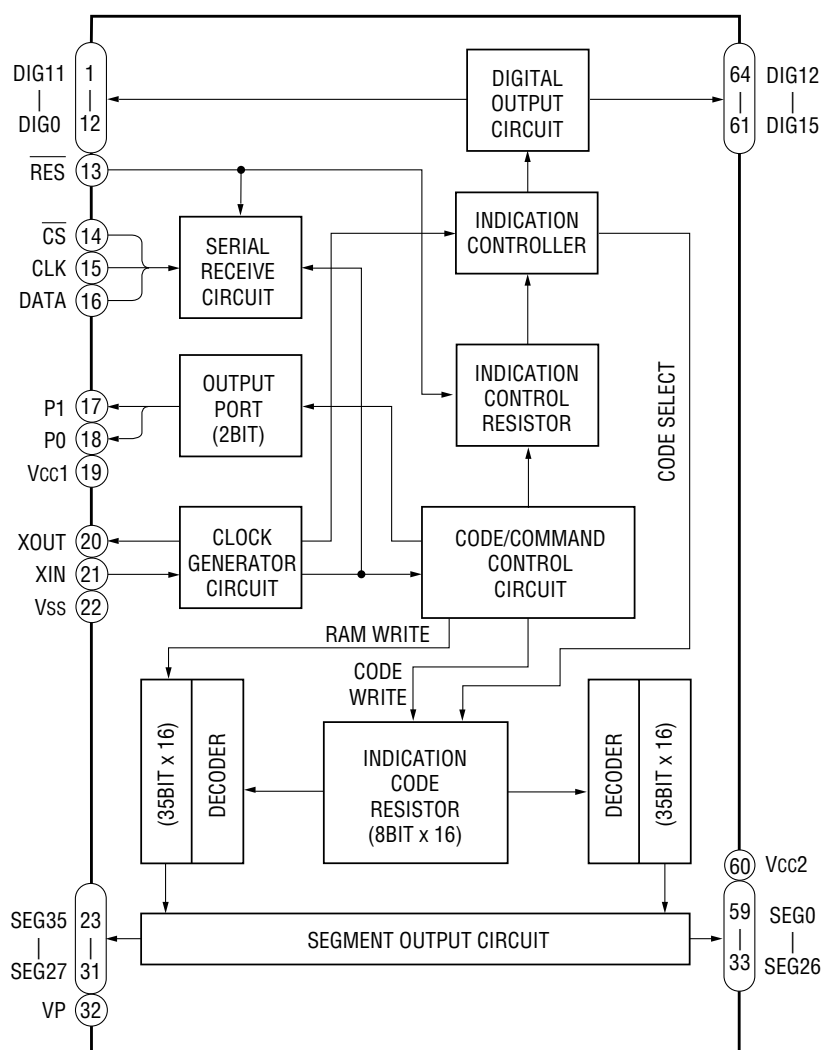
IC1102 BA6956AN (BD (CD) BOARD)



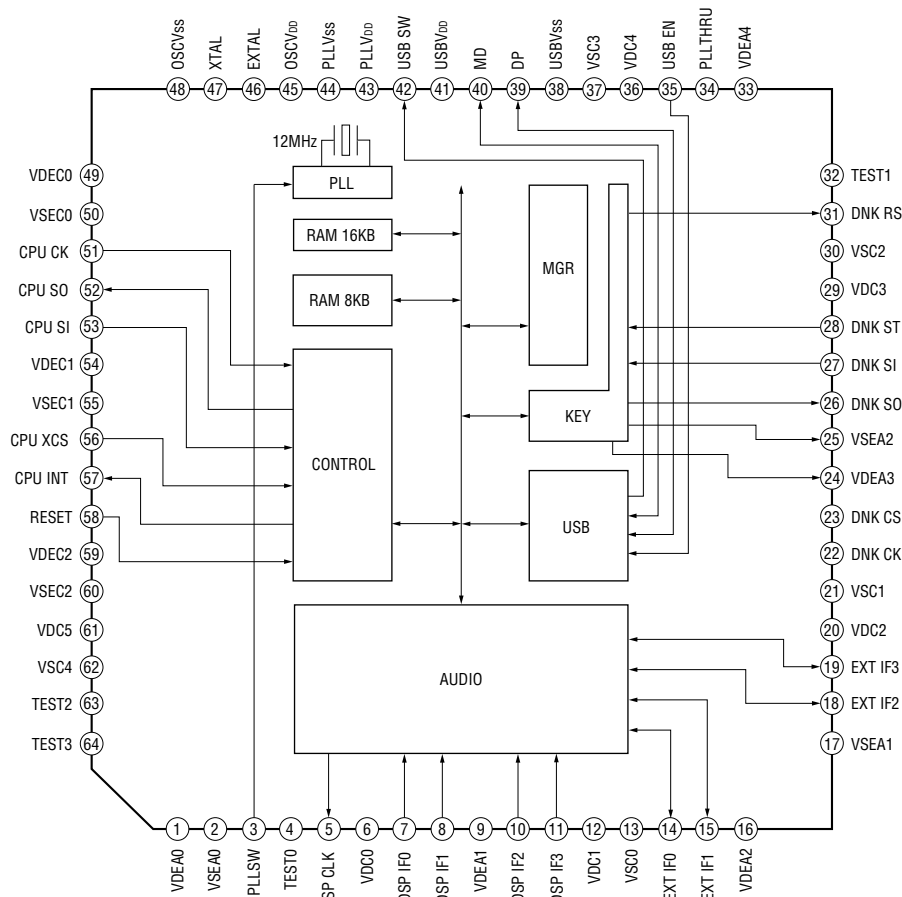
IC141 BH6519FS-E2 (BD (MD) BOARD)



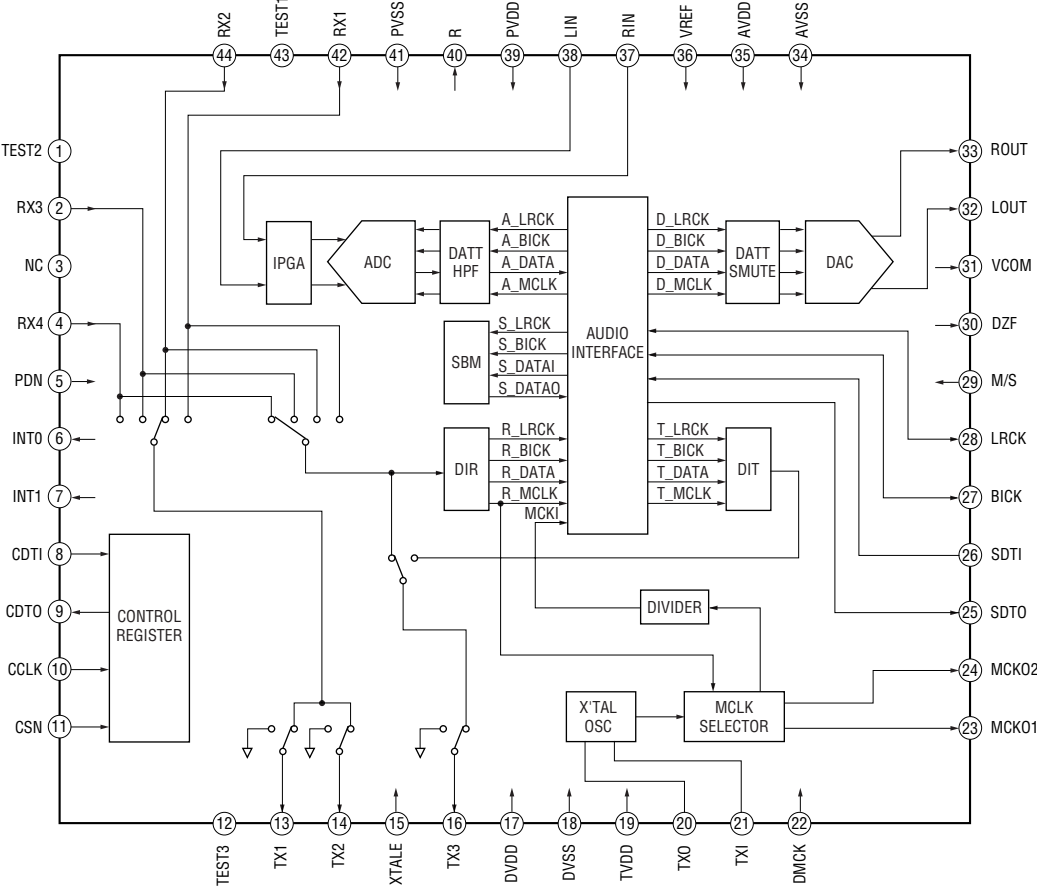
IC601 M66004M8FP-200D (PANEL BOARD)



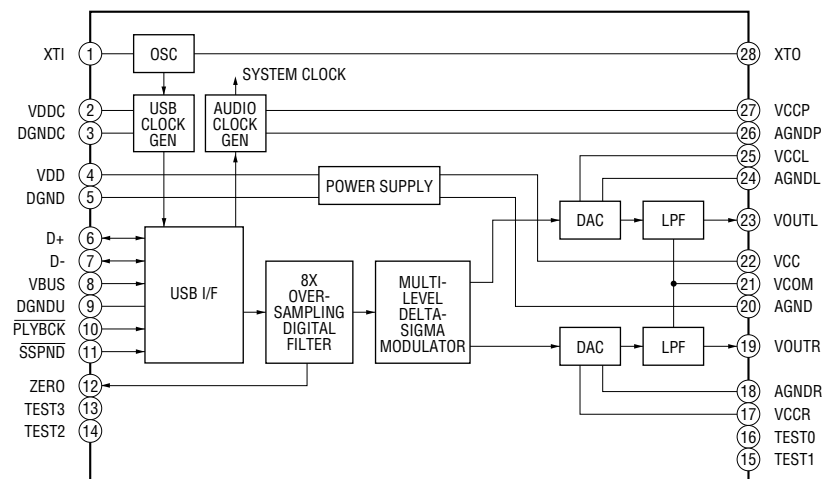
IC1002 CXD1873R (MD DIGITAL BOARD)



IC1006 CXD9692R (MD DIGITAL BOARD)



IC1007 PCM2702E/2K (MD DIGITAL BOARD)



6-26. IC Pin Function Description

• IC101 CXA2523AR RF Amplifier (BD(MD) Board)

Pin No.	Pin Name	I/O	Description
1	I	I	I-V converted RF signal I input
2	J	I	I-V converted RF signal J input
3	VC	O	Middle point voltage (+1.5V) generation output
4 to 9	A to F	I	Signal input from the optical pick-up detector
10	PD	I	Light amount monitor input
11	APC	O	Laser APC output
12	APCREF	I	Reference voltage input for setting laser power
13	GND	—	Ground
14	TEMPI	I	Temperature sensor connection
15	TEMPR	O	Reference voltage output for the temperature sensor
16	SWDT	I	Serial data input from the CXD2662R
17	SCLK	I	Serial clock input from the CXD2662R
18	XLAT	I	Latch signal input from the CXD2662R “L”: Latch
19	XSTBY	I	Stand by signal input “L”: Stand by
20	F0CNT	I	Center frequency control voltage input of BPF22, BPF3T, EQ from the CXD2662R
21	VREF	O	Reference voltage output (Not used)
22	EQADJ	I/O	Center frequency setting pin for the internal circuit EQ
23	3TADJ	I/O	Center frequency setting pin for the internal circuit BPF3T
24	Vcc	—	+3V power supply
25	WBLADJ	I/O	Center frequency setting pin for the internal circuit BPF22
26	TE	O	Tracking error signal output to the CXD2662R
27	CSLED	—	External capacitor connection pin for the sled error signal LPF
28	SE	O	Sled error signal output to the CXD2662R
29	ADFM	O	FM signal output of ADIP
30	ADIN	I	ADIP signal comparator input ADFM is connected with AC coupling
31	ADAGC	—	External capacitor connection pin for AGC of ADIP
32	ADFG	O	ADIP duplex signal output to the CXD2662R
33	AUX	O	I3 signal/temperature signal output to the CXD2662R (Switching with a serial command)
34	FE	O	Focus error signal output to the CXD2662R
35	ABCD	O	Light amount signal output to the CXD2662R
36	BOTM	O	RF/ABCD bottom hold signal output to the CXD2662R
37	PEAK	O	RF/ABCD peak hold signal output to the CXD2662R
38	RF	O	RF equalizer output to the CXD2662R
39	RFAGC	—	External capacitor connection pin for the RF AGC circuit
40	AGCI	I	Input to the RF AGC circuit The RF amplifier output is input with AC coupling
41	COMPO	O	User comparator output (Not used)
42	COMPP	I	User comparator input (Fixed at “L”)
43	ADDC	I/O	External capacitor pin for cutting the low band of the ADIP amplifier
44	OPO	O	User operation amplifier output (Not used)
45	OPN	I	User operation amplifier inversion input (Fixed at “L”)
46	RFO	O	RF amplifier output
47	MORFI	I	Groove RF signal is input with AC coupling
48	MORFO	O	Groove RF signal output

• Abbreviation

APC: Auto Power Control

AGC: Auto Gain Control

• IC151 CXD2662R Digital Signal Processor, Digital Servo Signal Processor (BD(MD) Board)

Pin No.	Pin Name	I/O	Description
1	MNT0 (FOK)	O	Function FOK signal output to the master controller (monitor output) “H” is output when focus is on (Not used)
2	MNT1 (SHCK)	O	Track jump detection signal output to the master controller (monitor output)
3	MNT2 (XBUSY)	O	Monitor 2 output to the master controller (monitor output)
4	MNT3 (SLOC)	O	Monitor 3 output to the master controller (monitor output) (Not used)
5	SWDT	I	Writing data signal input from the master controller
6	SCLK	I (S)	Serial clock signal input from the master controller
7	XLAT	I (S)	Serial latch signal input from the master controller
8	SRDT	O (3)	Reading data signal output to the master controller
9	SENS	O (3)	Internal status (SENSE) output to the master controller
10	XRST	I (S)	Reset signal input from the master controller “L”: Reset
11	SQSY	O	Subcode Q sync (SCOR) output to the master controller “L” is output every 13.3 msec. Almost all, “H” is output
12	DQSY	O	Digital In U-bit CD format or MD format subcode Q sync (SCOR) output to the master controller
13	RECP	I	Laser power switching input from the master controller “H”: Recording, “L”: Playback
14	XINT	O	Interrupt status output to the master controller
15	TX	O	Magnetic head ON/OFF control signal output
16	OSCI	I	System clock input (512Fs=22.5792 MHz)
17	OSCO	O	System clock output (512Fs=22.5792 MHz) (Not used)
18	XTSL	I	System clock frequency setting “L”: 45.1584 MHz, “H”: 22.5792 MHz (Fixed at “H”)
19	DIN0	I	Digital audio input (Optical input)
20	DIN1	I	Digital audio input (Optical input) (Fixed at “L”)
21	DOUT	O	Digital audio output (Optical output) (Open)
22	DADTI	I	Serial data input (Fixed at “L”)
23	LRCKI	I	LR clock input “H” : Lch, “L” : R ch (Fixed at “L”)
24	XBCKI	I	Serial data clock input (Fixed at “L”)
25	ADDT	I	Data input from the A/D converter
26	DADT	O	Data output to the D/A converter (Not used)
27	LRCK	O	LR clock output for the A/D and D/A converter (44.1 kHz) (Not used)
28	XBCK	O	Bit clock output to the A/D and D/A converter (2.8224 MHz)
29	FS256	O	11.2896 MHz clock output (Not used)
30	DVDD	—	+3V power supply (Digital)
31 to 34	A03 to A00	O	DRAM address output
35	A10	O	DRAM address output
36 to 40	A04 to A08	O	DRAM address output
41	A11	O	DRAM address output (Not used)
42	DVSS	—	Ground (Digital)
43	XOE	O	Output enable output for DRAM
44	XCAS	O	$\overline{\text{CAS}}$ signal output for DRAM
45	A09	O	Address output for DRAM
46	XRAS	O	$\overline{\text{RAS}}$ signal output for DRAM
47	XWE	O	Write enable signal output for DRAM

* I (S) stands for Schmidt input, I (A) for analog input, O (3) for 3-state output, and O (A) for analog output in the column I/O

HCD-C7NT

Pin No.	Pin Name	I/O	Description
48	D1	I/O	Data input/output for DRAM
49	D0	I/O	
50, 51	D2, D3	I/O	
52	MVCI	I (S)	Clock input from an external VCO (Fixed at “L”)
53	ASYO	O	Playback EFM duplex signal output
54	ASYI	I (A)	Playback EFM comparator slice level input
55	AVDD	—	+3V power supply (Analog)
56	BIAS	I (A)	Playback EFM comparator bias current input
57	RFI	I (A)	Playback EFM RF signal input from the CXA2523AR
58	AVSS	—	Ground (Analog)
59	PCO	O (3)	Phase comparison output for the recording/playback EFM master PLL
60	FILI	I (A)	Filter input for the recording/playback EFM master PLL
61	FILO	O (A)	Filter output for the recording/playback EFM master PLL
62	CLTV	I (A)	Internal VCO control voltage input for the recording/playback EFM master PLL
63	PEAK	I (A)	Light amount signal peak hold input from the CXA2523AR
64	BOTM	I (A)	Light amount signal bottom hold input from the CXA2523AR
65	ABCD	I (A)	Light amount signal input from the CXA2523AR
66	FE	I (A)	Focus error signal input from the CXA2523AR
67	AUX1	I (A)	Auxiliary A/D input from the CXA2523AR
68	VC	I (A)	Middle point voltage (+1.5V) input from the CXA2523AR
69	ADIO	O (A)	Monitor output of the A/D converter input signal (Not used)
70	AVDD	—	+3V power supply (Analog)
71	ADRT	I (A)	A/D converter operational range upper limit voltage input (Fixed at “H”)
72	ADRB	I (A)	A/D converter operational range lower limit voltage input (Fixed at “L”)
73	AVSS	—	Ground (Analog)
74	SE	I (A)	Sled error signal input from the CXA2523AR
75	TE	I (A)	Tracking error signal input from the CXA2523AR
76	DCHG	I (A)	Connected to +3V power supply
77	TEST4	I (A)	Error signal input for the laser digital APC (Fixed at “H”)
78	ADFG	I (S)	ADIP duplex FM signal input from the CXA2523AR (22.05 ± 1 kHz)
79	F0CNT	O	Filter f0 control output to the CXA2523AR
80	XLRF	O	Control latch output to the CXA2523AR
81	CKRF	O	Control clock output to the CXA2523AR
82	DTRF	O	Control data output to the CXA2523AR
83	APCREF	O	Reference PWM output for the laser APC
84	TEST0	O	PWM output for the laser digital APC (Not used)
85	TRDR	O	Tracking servo drive PWM output (–) to the BH6519FS

- Abbreviation
 EFM: Eight to Fourteen Modulation
 PLL : Phase Locked Loop
 VCO: Voltage Controlled Oscillator

Pin No.	Pin Name	I/O	Description
86	TFDR	O	Tracking servo drive PWM output (+) to the BH6519FS
87	DVDD	—	+3V power supply (Digital)
88	FFDR	O	Focus servo drive PWM output (+) to the BH6519FS
89	FRDR	O	Focus servo drive PWM output (–) to the BH6519FS
90	FS4	O	176.4 kHz clock signal output (X’tal) (Not used)
91	SRDR	O	Sled servo drive PWM output (–) to the BH6519FS
92	SFDR	O	Sled servo drive PWM output (+) to the BH6519FS
93	SPRD	O	Spindle servo drive PWM output (–) to the BH6519FS
94	SPFD	O	Spindle servo drive PWM output (+) to the BH6519FS
95	FGIN	I (S)	Test input (Fixed at “L”)
96 to 98	TEST1 to TEST3	I	
99	DVSS	—	Ground (Digital)
100	EFMO	O	EFM output when recording to the over write head driver

- Abbreviation
EFM: Eight to Fourteen Modulation

• IC1003 M30835 Master Controller (MD DIGITAL Board)

Pin No.	Pin Name	I/O	Description
1	A-IN	–	Not used
2	RMC	–	Not used
3	NETMD-SO	O	Serial communication data output to the IC1002
4	NETMD-SI	I	Serial communication data input from the IC1002
5	NETMD-CLK	O	Serial clock output to the IC1002
6	BYTE	I	Data bus selection signal input (connected to ground)
7	CNVSS	I	Processor mode selection signal input (connected to ground)
8	XIN-T	I	Sub clock input (32.768kHz)
9	XOUT-T	O	Sub clock output (32.768kHz)
10	S.RST	I	System reset input
11	X OUT	O	Main clock output (10MHz)
12	VSS	–	Ground
13	X IN	I	Main clock input (10MHz)
14	VCC	–	Power supply
15	NMI	I	Fixed at “H” (pull up)
16	DQSY	I	Digital in sync input (record system)
17	P.DOWN	I	Power down detection input “L”: power down
18	SQSY	I	ADIP (MO) sync or subcode Q(PIT) sync signal input from the CXD2662R (playback system)
19	KBCLK	–	Not used
20	KB.DATA	–	Not used
21	I2CBUSY	O	I2C cable connection check signal output
22	A1 OUT	–	Not used
23	X INT	I	Interrupt request signal input from the CXD2662R
24	NC	–	Not used
25	NC	–	Not used
26	NC	–	Not used
27	I2CCLK	I/O	I2C serial clock input/output
28	I2CDATA	I/O	I2C serial data input/output
29	SWDT	O	Writing data output to the serial bus
30	SRDT	I	Reading data input from the serial bus
31	SCLK	O	Clock signal output to the serial bus
32	KB.CTRL	–	Not used
33	L3DATAO	O	Communication data output to the IC1006
34	L3DATAI	–	Communication data input from the IC1006
35	L3CLK	O	Clock output to the IC1006
36	L3MODE	O	Chip select signal output to the IC1006
37	ADA.RST	–	Not used
38	ADA.LAT	–	Not used
39	EPM	O	Not used
40	NC	–	Not used
41	NC	–	Not used
42	MOD	O	Laser modulation switching signal output “L”: off, “H”: on
43	LDON	O	Laser ON/OFF control signal output “H”: laser on
44	CE	I	Not used (fixed at “H”)
45	LIMIT-IN	I	Detection signal input from the limit switch “L”: sled limit in, “H”: sled limit out
46	WRPWR	O	Write power ON/OFF control signal output “L”: off, “H”: on
47	REC-SW	I	Detection signal input from the recording position detection switch
48	D.RST	O	Digital reset signal output to the CXD2662R and the motor driver “L”: rest
49	SENS	I	SENS signal input from the CXD2662R
50	PLAY-SW	I	Detection signal input from the playback position detection switch “L”: playback

Pin No.	Pin Name	I/O	Description
51	XLAT	O	Latch signal output to the DSP IC
52	SCL	O	Serial clock output to the EEPROM
53	OUT-SW	I	Detection signal input from the loading out detection switch
54	MNT2	I	Busy monitoring signal input from the mechanism deck
55	MNT1	I	Track jump detection signal input from the mechanism deck
56	EEP-WP	O	EEP-ROM write protect signal output “L”: write enable
57	SDA	I/O	Serial data input/output with the EEPROM
58	REFLECT	I	Disc reflection rate detection signal input from the reflect detection switch “H”: disc with low reflection rate
59	PROTECT	I	Recording-protection claw detection signal input from the protect detection switch “H”: protect
60	VCC	–	Power supply
61	NC	–	Not used
62	VSS	–	Ground
63	LOAD-LO	O	Loading motor voltage control signal output “L”: high voltage, “H”: low voltage
64	LOAD-OUT	O	Loading motor control signal output “H”: out
65	LOAD-IN	O	Loading motor control signal output “H”: in
66	TEST0	I	Input terminal for test
67	TEST1	I	Input terminal for test
68	TEST2	I	Input terminal for test
69	TEST3	I	Input terminal for test
70	NC	–	Not used
71	NC	–	Not used
72	NC	–	Not used
73	NETMD-INT	I	Interrupt request signal input from the IC1002 “L”: interrupt request active
74	NETMD-CS	O	Chip select signal output to the IC1002
75	NETMDRST	O	Reset signal output to the IC1002 “L”: reset
76	NETMD PLLSW	O	PLL function ON/OFF control signal output to the IC1002 “L”: PLL function on
77	VBUS	I	USB VBUS detection signal input “H”: USB on
78	NC	–	Not used
79	LOCK	I	Digital in LOCK detection signal input from the IC1006
80	NC	–	Not used
81	ADSEL-2	O	Not used
82	ADSEL-1	O	A/D converter input source selection signal output to the IC1012
83	ADSEL-0	O	A/D converter input source selection signal output to the IC1012
84	OPTSEL	O	Optical input selection signal output
85	DACMUTE	–	Not used
86	DARESET	O	Reset signal output to the D/A converter “L”: active
87	IOP	I	Iop measurement signal input
88	SEL1	I	Destination setting terminal
89	SEL0	I	Destination setting terminal
90	TIMER	–	Not used
91	KEY3	–	Not used
92	KEY2	–	Not used
93	KEY1	–	Not used
94	AVSS	–	Ground (analog)
95	KEY0	–	Not used
96	VREF	I	Reference voltage input
97	AVCC	–	Power supply (analog)
98	NC	–	Not used
99	FLDATA	–	Not used
100	FLCK	–	Not used

• IC501 μ PD703032AYGY-M02-3BA Master Control (UCOM Board)

Pin No.	Pin Name	I/O	Description
1	FL-DATA	O	Data signal output to the fluorescent indicator tube
2	FL-CLK	O	Clock signal output to the fluorescent indicator tube
3	SDA	I/O	I2C data input/output
4	FL-CE	O	Enable signal output to the fluorescent indicator tube
5	SCL	I/O	I2C clock input/output
6	FL-RST	O	Reset signal output to the fluorescent indicator tube
7	CXD-DATA	O	Data output to the DSP
8	CXD-CLK	O	Clock signal output to the DSP
9	EVDD	–	Power supply (I/O port)
10	EVSS	–	Ground (I/O port)
11	CXD-XLT	O	Latch signal output to the DSP
12	PWM1	O	PWM1 signal output
13	LDON	O	Laser power supply control signal output
14	SENSE	I	CD DENSE signal input
15	SUBQ	I	CD SUBQ signal input
16	CHECK	O	Not used (open)
17	SCLK	O	CD SUBQ clock signal output
18	CTRL1	O	CTRL1 (double times speed selection) signal output
19	PWM2	O	PWM2 signal output
20	PWM3	O	PWM3 signal output
21	VPP	–	Not used
22	SP-MUTE	O	Not used (open)
23	1-4	O	Not used (open)
24	DMUTE	O	Muting signal output to the DAC
25	AMUTE	O	Not used (open)
26	LODNEG	O	Loading motor control signal output
27	LODPOS	O	Loading motor control signal output
28	BDPWR	O	Power supply control signal output to the CD section
29	BDRST	O	CD reset signal output
30	SW1	I	Loading switch signal input
31	SW2	I	Loading switch signal input
32	SW3(ENC-A)	I	Loading switch signal input
33	SW4(ENC-B)	I	Loading switch signal input
34	RESET	I	System reset input
35	XT1	I	Sub clock input
36	XT2	O	Sub clock output
37	REGC	–	Capacitor connection terminal for regulator output stabilizing
38	X2	O	Main system clock output
39	X1	I	Main system clock input
40	VSS	–	Ground
41	VDD	–	Power supply
42	CLKOUT	O	Clock output (open)
43	PLL-CLK	O	Clock signal output to the tuner
44	PLL-DO(μ COM-ST)	O	Data output to the tuner
45	PLL-DI(ST- μ COM)	I	Data input from the tuner
46	PLL-CE	O	Chip enable signal output to the tuner
47	ST-MUTE	O	Muting signal output to the tuner
48	STEREO	I	Stereo signal input from the tuner
49	TUNED	I	Tuning detection signal input from the tuner
50	RDS-DATA	I	RDS data input

Pin No.	Pin Name	I/O	Description
51	PROTECT	I	Not used (fixed at "H")
52	PRE-MUTE	O	Pre-amplifier muting signal output
53	PWR-MUTE	O	Not used (open)
54	REC-MUTE	O	REC muting signal output
55	HP-MUTE	O	Not used (open)
56	SPK-RELAY	O	Speaker relay control signal output
57	HELP	I/O	I2C busy signal input/output
58	BVDD	–	Power supply (bus interface)
59	BVSS	–	Ground (bus interface)
60	KBD-CHK	I	PC LINE connector detection signal input
61	KBD-DATA	I	Not used (fixed at "H")
62	VOL-CE	O	Volume latch signal output to the sound processor
63	VOL-CLK	O	Volume clock signal output to the sound processor
64	VOL-DATA	O	Volume data output to the sound processor
65	LED	O	LED control signal output
66	FAN-HIGH	O	Voltage control signal output for the fan
67	HP-IN	I	Headphone connection detection signal input
68	IO-RST	O	Not used (open)
69	PWR-RELAY	O	Power relay control signal output
70	MD-PWR	O	Power supply control signal output to the MD section
71	FL-ON	O	Not used (open)
72	ON/STANDBY	O	STANDBY LED control signal output
73	DIMMER	O	Not used (open)
74	AVDD	–	Power supply (analog)
75	AVSS	–	Ground (analog)
76	AVREF	–	Reference terminal (analog)
77	KEY1	I	Key input signal from the panel switches
78	KEY2	I	Key input signal from the panel switches
79	KEY3	I	Key input signal from the panel switches
80	ADJ	I	Adjustment mode input (fixed at "H")
81	DEST1	I	Destination setting terminal
82	DEST2	I	Destination setting terminal
83	DEST3	I	Destination setting terminal
84	DEST4	I	Destination setting terminal
85	MODEL1	I	Model setting terminal
86	MODEL2	I	Model setting terminal
87	DEVICE1	I	Device setting terminal
88	DEVICE2	I	Device setting terminal
89	KBD-CLKO	O	Key board clock output (fixed at "H")
90	KBD-CLKI	I	Key board clock input (fixed at "H")
91	AC-CUT	I	AC cut off detection signal input
92	PCPON	I	Power on detection signal input from the PC (for PC LINK)
93	KEY-RM	I	Remote control reception signal or power key detection signal input
94	SIRCS	I	Data input from the remote control receiver
95	SCOR	I	CD Q data request signal input
96	RDS-CLK	I	RDS clock signal input
97	IO-DI	–	Not used (open)
98	IO-DO	–	Not used (open)
99	IO-CLK	–	Not used (open)
100	IO-CE	–	Not used (open)

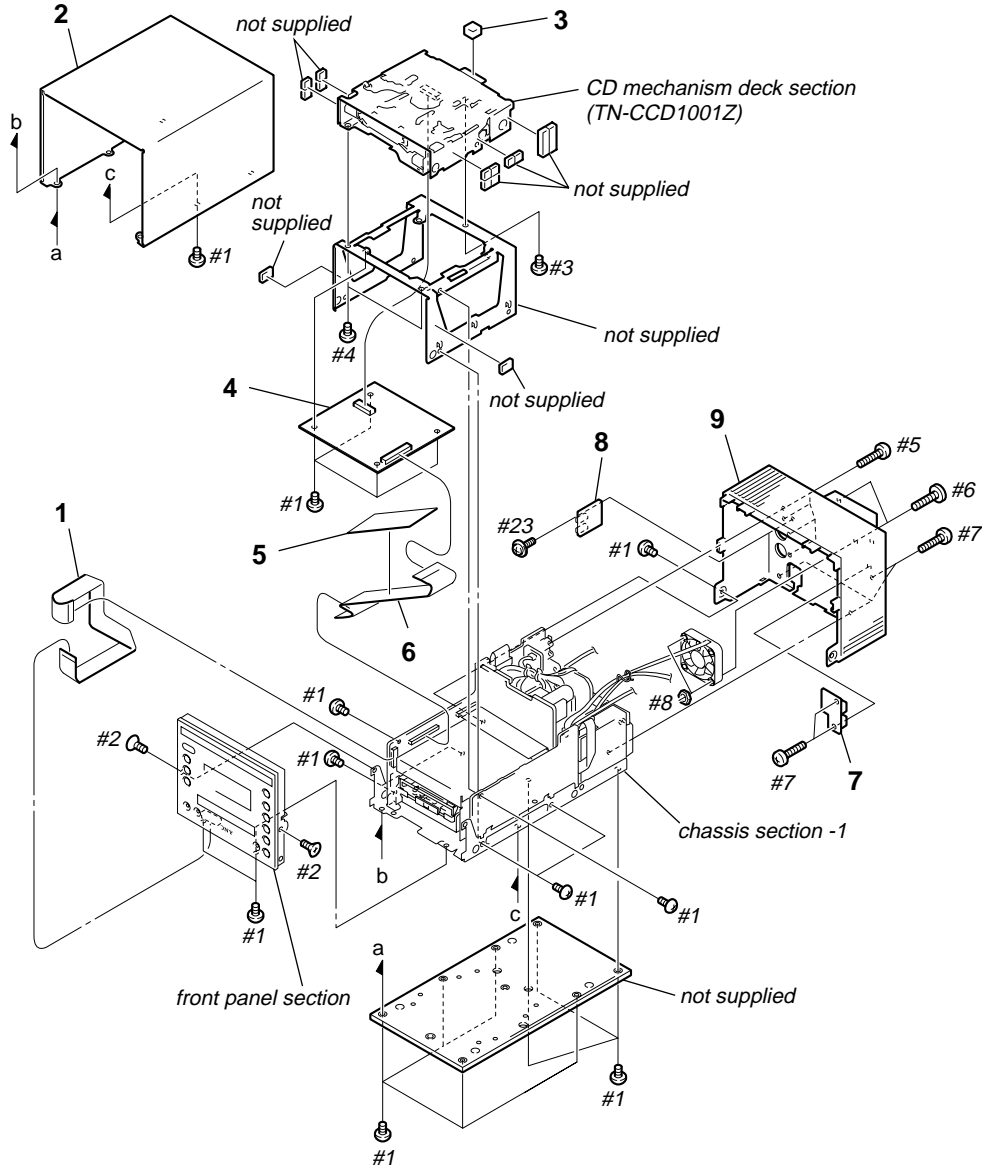
SECTION 7
EXPLODED VIEWS

- NOTE:
- XX, -X mean standardized parts, so they may have some differences from the original one.
 - Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

- The mechanical parts with no reference number in the exploded views are not supplied.
- Abbreviation
KR : Korean model

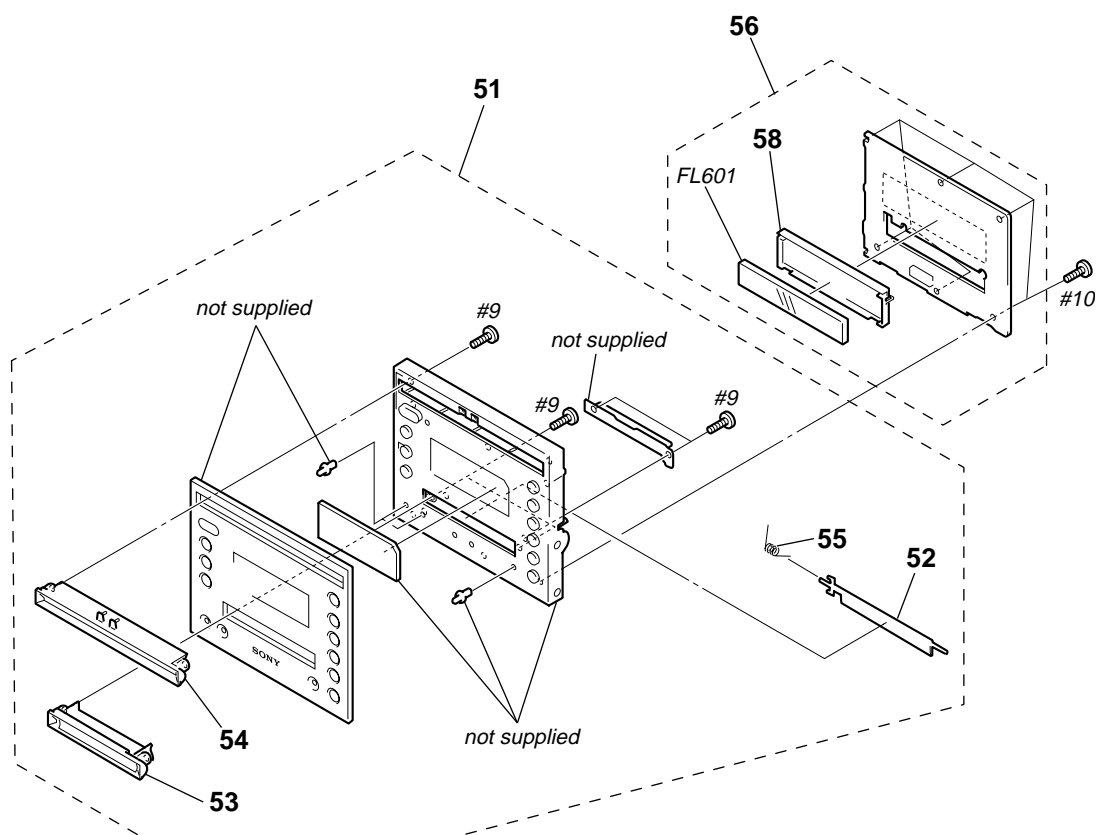
The components identified by mark Δ or dotted line with mark Δ are critical for safety. Replace only with part number specified.

7-1. Overall Section



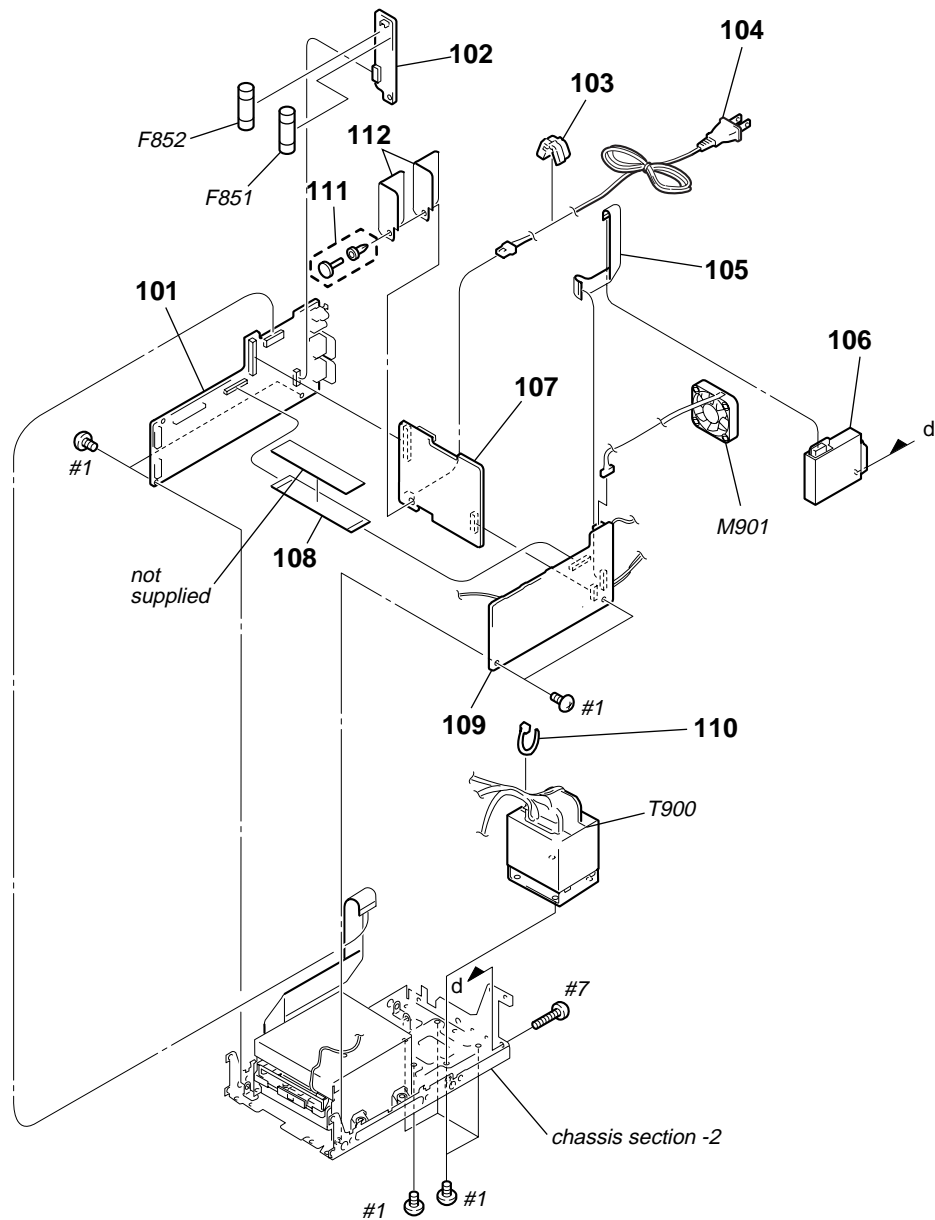
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
1	1-757-791-11	WIRE (FLAT TYPE) (16 CORE)		#1	7-685-870-01	SCREW +BVTT 3X5 (S)	
2	4-233-859-01	CASE		#2	7-685-245-19	SCREW +KTP 3X6 TYPE2 NON-SLIT	
3	4-886-865-01	CUSHION (A)		#3	7-685-852-04	SCREW +BVTT 2X5 (S)	
4	A-4476-934-A	BD(CD) BOARD, COMPLETE		#4	7-685-861-01	SCREW +BVTT 2.6X5 (S)	
5	4-235-553-01	SPACER (A)		#5	7-685-648-79	SCREW +BVTP 3X12 TYPE2 N-S	
6	1-773-289-11	WIRE (FLAT TYPE) (29 CORE)		#6	7-682-565-09	SCREW +B 4X16	
7	1-683-334-13	JACK BOARD		#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
8	1-683-333-13	HP BOARD		#8	7-684-024-04	N 4, TYPE 2	
9	4-237-345-11	REAR COVER		* #23	7-685-903-21	BRACKET, YOKE	

7-2. Front Panel Section



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
51	X-4954-278-2	FRONT PANEL ASSY		56	A-4727-470-A	PANEL BOARD, COMPLETE	
52	4-228-335-11	LID (MD)		58	4-233-850-01	HOLDER (FL)	
53	4-233-846-14	ESCUTCHEON (MD)		#9	7-685-104-19	SCREW +P 2X6 TYPE2 NON-SLIT	
54	4-233-847-14	ESCUTCHEON (CD)		#10	7-685-504-19	SCREW +BTP 2X6 TYPE2 N-S	
55	4-228-323-01	SPRING (MD)		FL601	1-518-788-11	INDICATOR TUBE, FLUORESCENT	

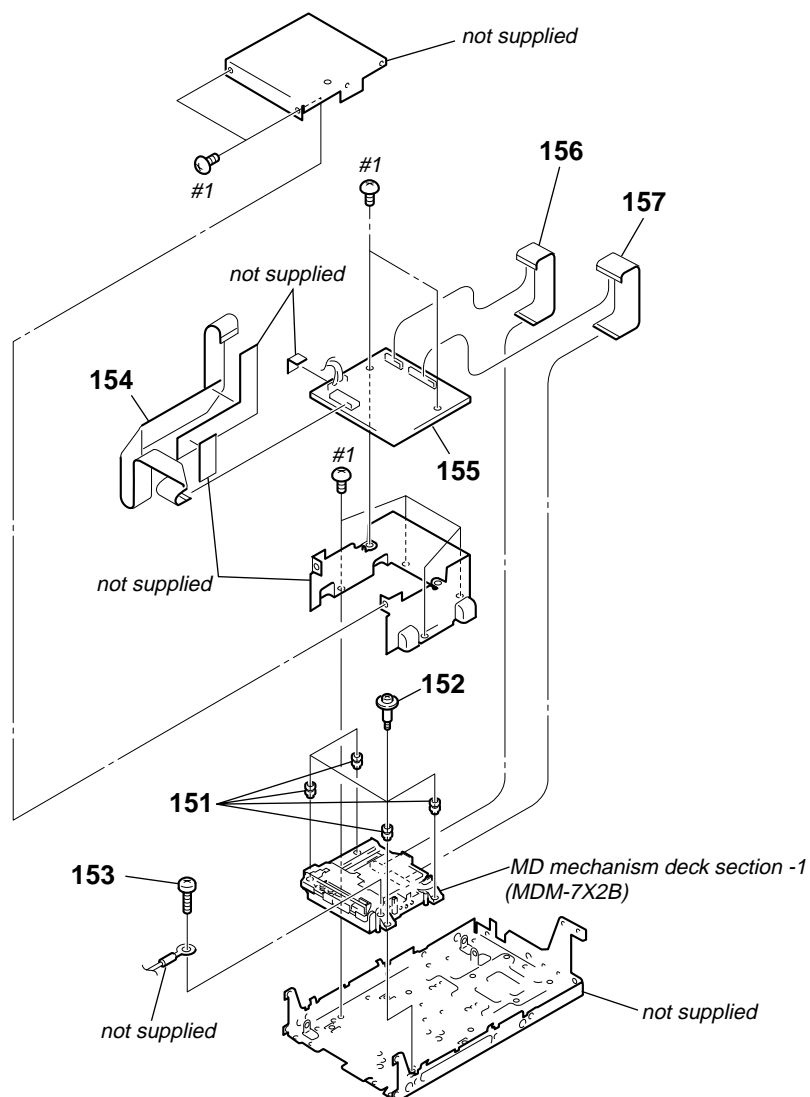
7-3. Chassis Section-1



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
101	A-4727-467-A	UCOM BOARD, COMPLETE (AEP, UK)		110	3-701-748-00	CLAMP	
101	A-4727-481-A	UCOM BOARD, COMPLETE (KR)		111	4-812-134-31	RIVET (DIA. 3.5), NYLON	
102	1-683-332-13	AMP POWER BOARD		112	4-234-235-02	INSULATED PLATE (POWER)	
103	3-703-244-00	BUSHING (2104), CORD		△ F851	1-532-286-00	FUSE, GLASS TUBE (DIA. 5) (T2.5AL/250V)	(AEP, UK)
△ 104	1-769-079-21	CORD, POWER (KR)		△ F851	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) (4A/250V) (KR)	
△ 104	1-777-071-21	CORD, POWER (AEP, UK)		△ F852	1-532-286-00	FUSE, GLASS TUBE (DIA. 5) (T2.5AL/250V)	(AEP, UK)
105	1-769-943-11	WIRE (FLAT TYPE) (11 CORE) (KR)		△ F852	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) (4A/250V) (KR)	
105	1-773-007-11	WIRE (FLAT TYPE) (15 CORE) (AEP, UK)		M901	1-698-997-11	FAN, D.C.	
106	1-693-529-51	TUNER (FM/AM) (AEP, UK)		△ T900	1-437-239-11	TRANSFORMER, POWER (MAIN) (AEP, UK)	
106	1-693-536-11	TUNER (FM/AM) (KR)		△ T900	1-437-241-11	TRANSFORMER, POWER (MAIN) (KR)	
107	A-4727-468-A	POWER BOARD, COMPLETE (AEP, UK)		#1	7-685-870-01	SCREW +BVTT 3X5 (S)	
107	A-4727-482-A	POWER BOARD, COMPLETE (KR)		#7	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
108	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)					
109	A-4727-472-A	AUDIO BOARD, COMPLETE (KR)					
109	A-4727-478-A	AUDIO BOARD, COMPLETE (AEP, UK)					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

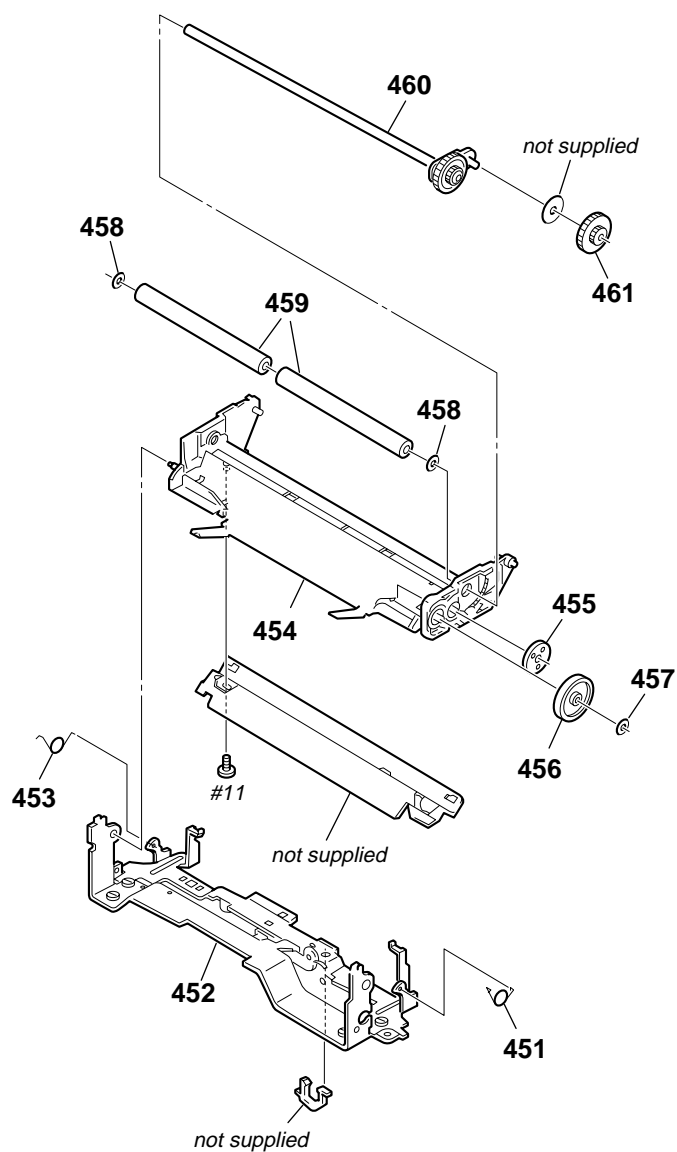
7-4. Chassis Section-2



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	4-231-555-01	INSULATOR		155	A-4727-479-A	MD DIGITAL BOARD, COMPLETE	
152	4-228-643-21	SCREW (+BVTTWH M3), STEP		156	1-823-773-11	WIRE (FLAT TYPE) (23 CORE)	
153	4-231-113-01	SCREW (1.7X3), BTN		157	1-823-838-11	WIRE (FLAT TYPE) (27 SORE)	
154	1-773-138-11	WIRE (FLAT TYPE) (19 CORE)		#1	7-685-870-01	SCREW +BVTT 3X5 (S)	

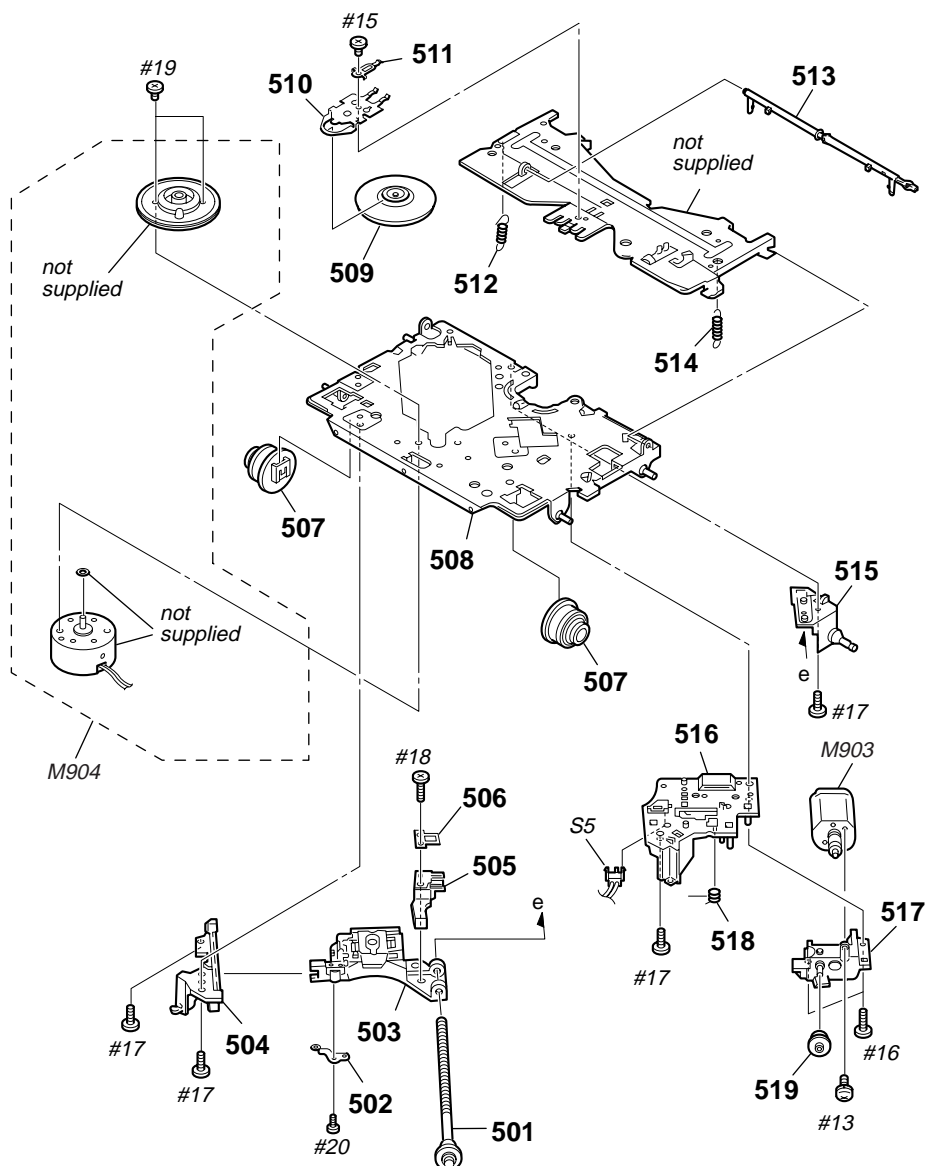
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
401	4-236-062-01	PIN, DAMPER		408	1-682-101-11	PICK-UP FLEXIBLE BOARD	
402	4-236-087-01	SPRING (FZ), HANG UP		CN1	1-815-750-11	CONNECTOR (TMK-W26X-A1)	
403	4-236-114-01	BELT, LOADING		M902	X-4954-023-1	MOTOR ASSY, LOADING	
404	4-236-088-01	SPRING (R), HANG UP		#11	7-685-101-11	SCREW +P 2X3 NON-SLIT TYPE2	
405	4-236-101-01	DAMPER (J)		#12	7-685-103-19	SCREW +P 2X5 TYPE2 NON-SLIT	
406	1-682-100-11	CONNECTOR BOARD		#13	7-627-553-38	SCREW,PRECISION +P 2X3	
407	4-236-105-01	HOLDER, FPC		#14	7-627-553-28	SCREW,PRECISION +P 2X2.5	

7-6. CD Mechanism Deck Section – Front Bracket Section (TN-CCD1001Z)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
451	4-236-112-01	SPRING (R), LOADING PULLEY		457	4-236-118-01	WASHER (117)	
452	4-236-115-01	BRACKET (J), FRONT		458	4-236-116-01	WASHER (113)	
453	4-236-111-01	SPRING (L), LOADING PULLEY		459	4-236-110-01	ROLLER, LOADING	
454	4-236-106-01	BRACKET, GEAR MOUNT		460	X-4954-024-1	SHAFT ASSY, LOADING ROLLER	
455	4-236-108-01	GEAR (3), LOADING		461	4-236-109-01	GEAR (5), LOADING	
456	4-236-107-01	GEAR (2), LOADING		#11	7-685-101-11	SCREW +P 2X3 NON-SLIT TYPE2	

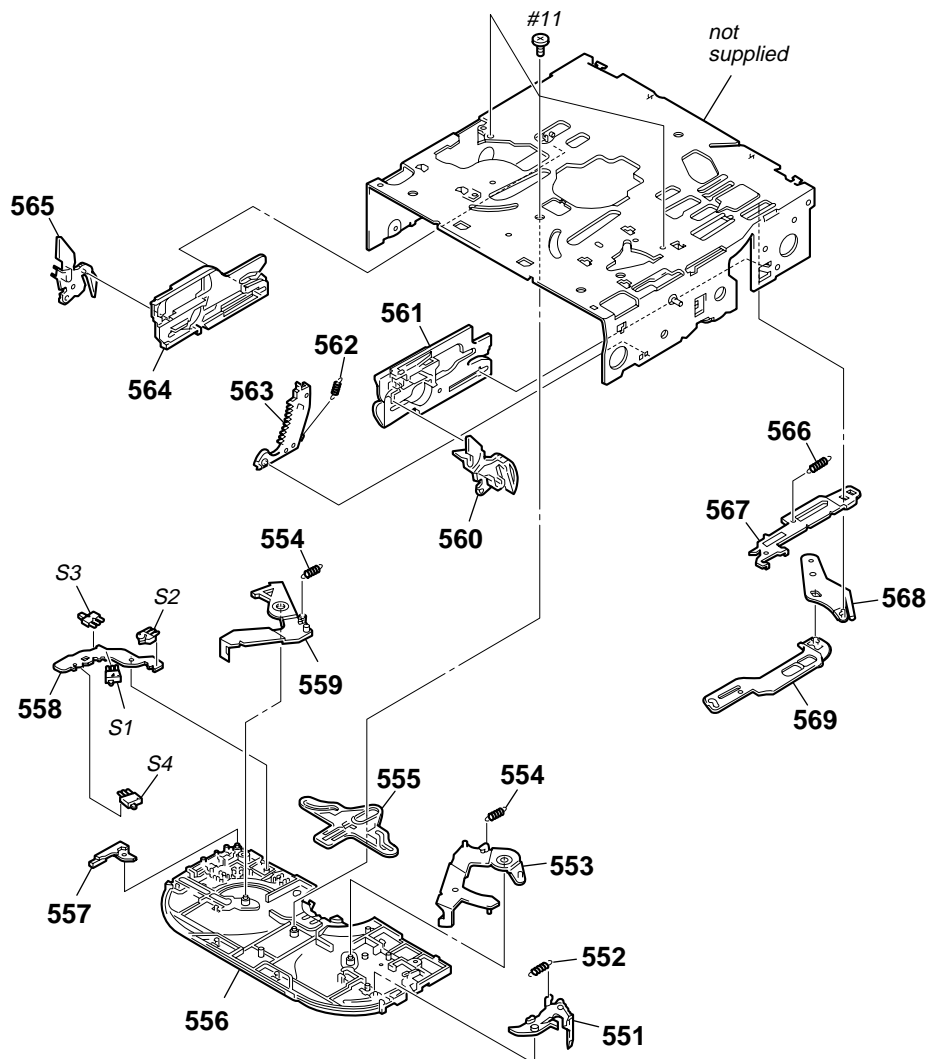
7-7. CD Mechanism Deck Section – Base Section (TN-CCD1001Z)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
501	X-4954-022-1	SCREW ASSY, FEED		516	4-236-090-01	BASE, FM	
502	4-236-104-01	SPRING, PULLEY GUIDE		517	4-236-091-01	BRACKET, FD GEAR	
△ 503	1-758-631-11	OPTICAL BLOCK(CD) (OPTIMA-720L1E)		518	4-236-093-01	SPRING, THRUST	
504	4-236-092-01	GUIDE, PULLEY		519	4-236-089-01	GEAR, PULLEY	
505	4-236-094-01	PULLEY (M)		M903	X-4954-020-1	MOTOR ASSY, FEED	
506	4-236-095-01	SPRING, DETENT		M904	X-4954-021-1	MOTOR ASSY, SPINDLE	
507	4-236-101-01	DAMPER (J)		S5	1-786-212-11	SWITCH (DETECTION) (LIMIT IN)	
508	X-4954-025-1	BASE ASSY, TT		#13	7-627-553-38	SCREW,PRECISION +P 2X3	
509	4-236-097-01	CLAMP		#15	7-627-553-17	PRECISION SCREW +P 2X2 TYPE 3	
510	4-236-100-01	PLATE, CLAMP		#16	7-627-553-78	SCREW,PRECISION +P 2X10	
511	4-236-099-01	RETAINER, 8CM STOPPER		#17	7-627-553-68	SCREW, PRECISION +P 2X6 TYPE3	
512	4-236-102-01	SPRING (L), CLIP ARM		#18	7-627-552-88	SCREW, PRECISION +P 1.7X2.2	
513	4-236-098-01	STOPPER, 8cm		#19	7-627-552-77	SCREW,PRECISION +P 1.7X6	
514	4-236-096-01	SPRING, CLIP ARM		#20	7-627-551-18	SCREW,PRECISION +P 1.4X2	
515	4-236-103-01	GUIDE, SCREW					

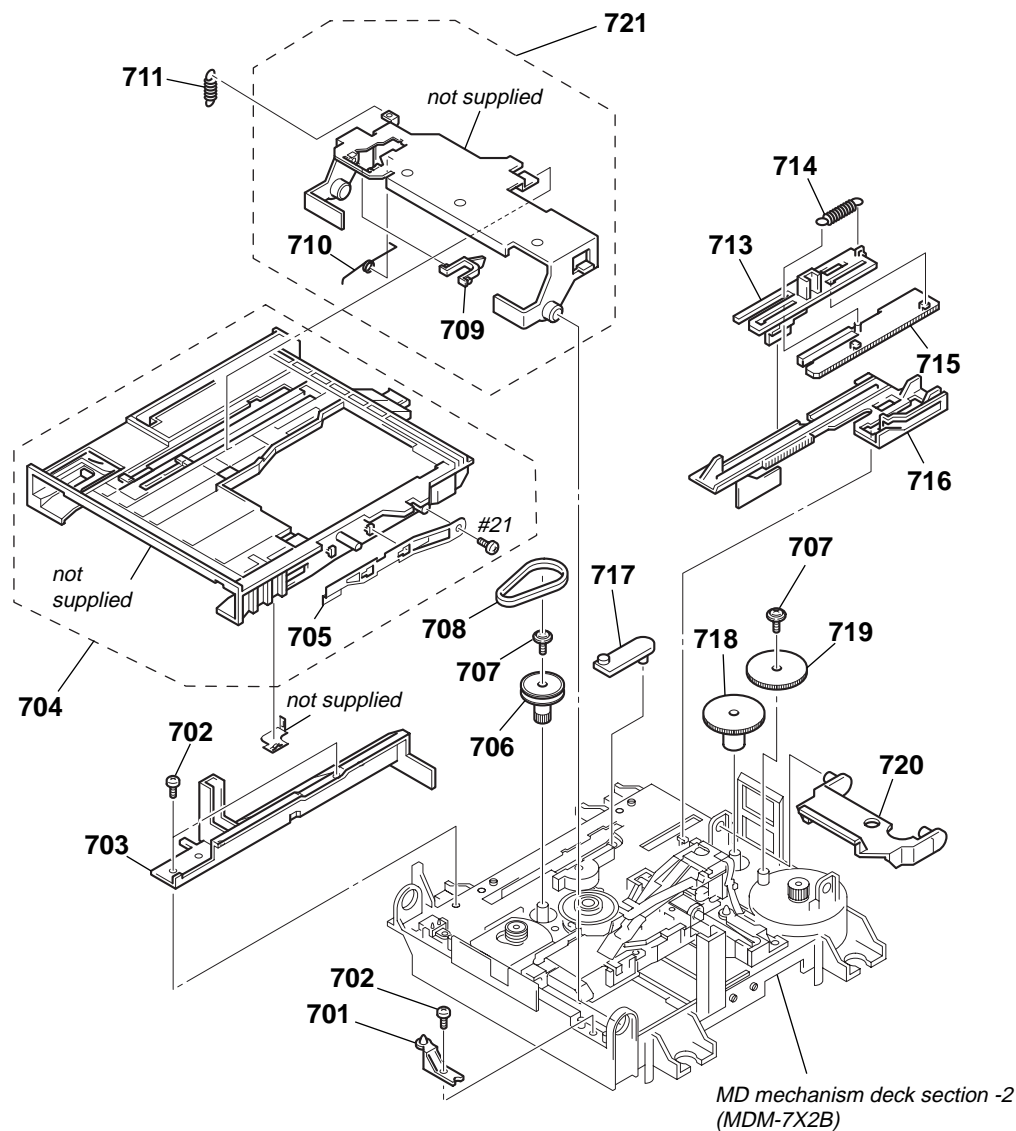
The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

7-8. CD Mechanism Deck Section – Chassis Section (TN-CCD1001Z)



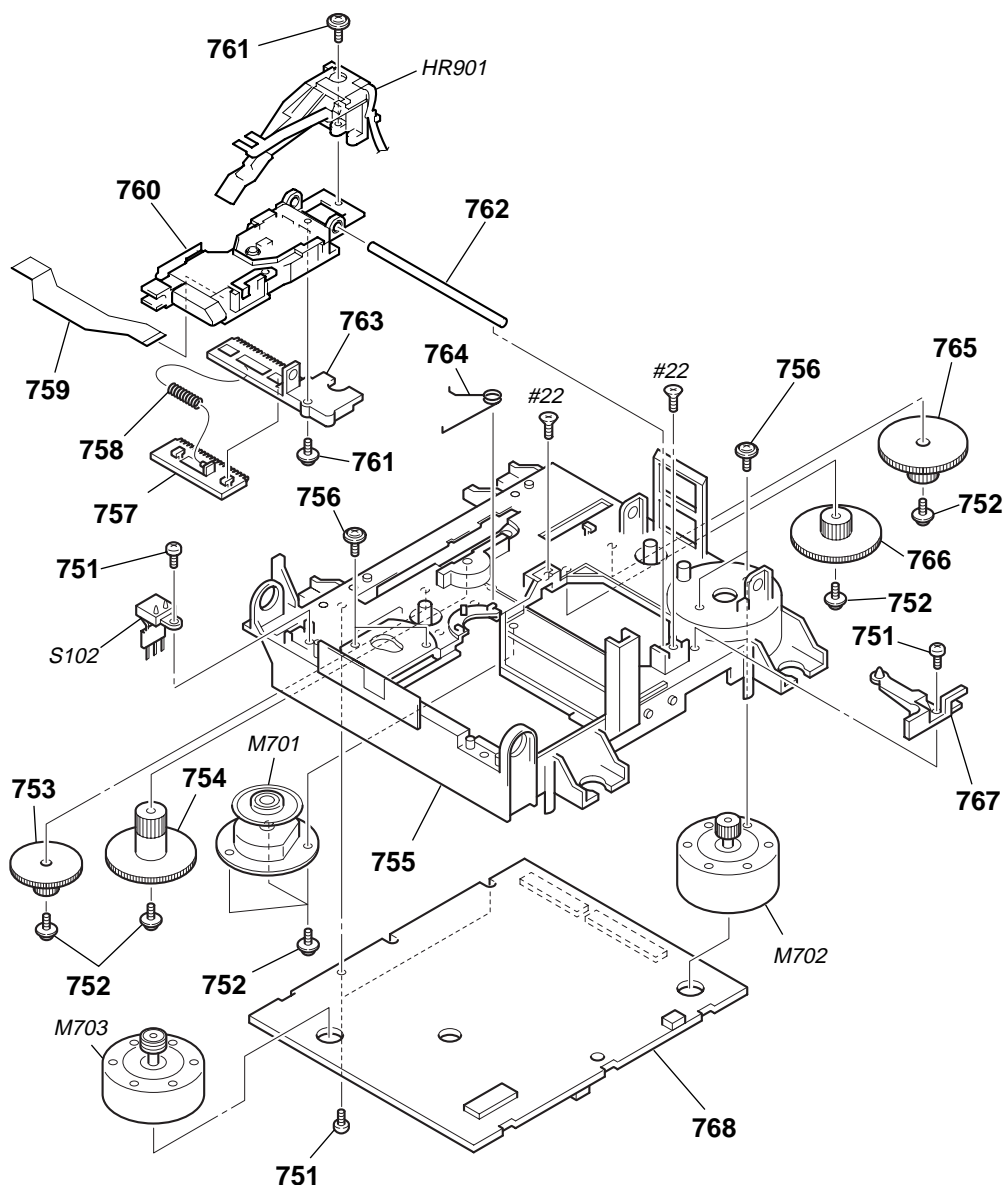
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
551	4-236-085-01	ARM, SLIDE		565	4-236-079-01	ARM (L), HOLDER	
552	4-236-086-01	SPRING, SLIDE ARM		566	4-236-077-01	SPRING, TRIGGER	
553	4-236-073-01	ARM (R), S		567	4-236-076-01	TRIGGER (Z)	
554	4-236-074-01	SPRING, S ARM		568	4-236-078-01	ARM, TRIGGER	
555	4-236-064-01	HOLDER, S ARM		569	4-236-075-01	LEVER, TRIGGER	
556	4-236-063-01	HOLDER, UPPER		S1	1-786-214-11	SWITCH (DETECTION) (DISC IN/8cm DISC DETECT)	
557	4-236-113-01	ACTUATOR, SWITCH		S2	1-786-213-11	SWITCH (DETECTION) (12cm DISC/12cm DISC EJECT END DETECT)	
558	1-682-099-11	SW BOARD		S3	1-786-213-11	SWITCH (DETECTION) (DISC/CHACKING/RELEASE DETECT)	
559	4-236-065-01	ARM (L), S		S4	1-786-214-11	SWITCH (DETECTION) (8cm DISC EJECT END DETECT)	
560	4-236-080-01	ARM (R), HOLDER		#11	7-685-101-11	SCREW +P 2X3 NON-SLIT TYPE2	
561	4-236-082-01	HOLDER (R)					
562	4-236-084-01	SPRING, LOADING GEAR					
563	4-236-083-01	GEAR (6), LOADING					
564	4-236-081-01	HOLDER (L)					

7-9. MD Mechanism Deck Section-1 (MDM-7X2B)



Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* 701	4-996-267-01	BASE (BU-D)		713	4-226-996-01	LIMITTER (EJ)	
702	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		714	4-227-013-01	SPRING (EJ), TENSION	
703	4-226-994-01	GUIDE (L)		715	4-226-995-01	SLIDER (EJ)	
704	A-4735-075-B	HOLDER ASSY		716	4-226-997-04	SLIDER	
705	X-4952-665-1	SPRING (SHT) ASSY, LEAF		717	4-226-998-01	LEVER (CHG)	
706	4-227-002-01	GEAR, PULLEY		718	4-227-007-01	GEAR (SB)	
707	3-372-761-01	SCREW (M1.7), TAPPING		719	4-227-006-01	GEAR (SA)	
708	4-227-025-01	BELT (LOADING)		720	4-226-999-01	LEVER (HEAD)	
709	A-468-063-8A	LOCK (HOLDER)		721	A-4680-638-B	RETAINER COMPLETE ASSY	
710	4-229-533-02	SPRING (STOPPER), TORSION		#21	7-685-850-04	SCREW +BVTT 2X3 (S)	
711	4-227-012-01	SPRING (HOLDER), TENSION					

7-10. MD Mechanism Deck Section-2 (MDM-7X2B)




Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
751	4-231-319-01	SCREW (2X6) CZN, +B (P) TRI		763	4-226-992-01	BASE, SL	
752	3-372-761-01	SCREW (M1.7), TAPPING		764	4-230-716-01	SPRING (SPDL), TORSION	
753	4-227-008-01	GEAR (SC)		765	4-227-004-01	GEAR (LC)	
754	4-227-009-01	GEAR (SD)		766	4-227-005-01	GEAR (LD)	
755	4-226-989-01	CHASSIS		767	4-226-990-04	BASE (BU-A)	
756	4-211-036-01	SCREW (1.7X2.5), +PWH		768	A-4726-972-A	BD(MD) BOARD, COMPLETE	
757	4-226-993-01	RACK		M701	A-4735-757-A	MOTOR ASSY, SPINDLE	
758	4-227-014-01	SPRING (RACK), COMPRESSION		M702	A-4672-900-A	MOTOR ASSY, SLED	
759	1-678-514-11	FLEXIBLE BOARD		M703	A-4672-975-A	MOTOR ASSY, LOADING	
△ 760	A-4672-976-A	OPTICAL PICK-UP(MD) KMS-262E/Z-NP		S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFRECT/PROTECT)	
761	4-988-560-01	SCREW (+P 1.7X6)		HR901	1-500-695-12	HEAD, OVER LIGHT	
762	4-996-265-01	SHAFT, MAIN		#22	7-685-204-19	SCREW +KTP 2X6 TYPE2 NON-SLIT	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

AUDIO

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked “*” are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
uF: uF
- RESISTORS
All resistors are in ohms.
METAL: metal-film resistor
METAL OXIDE: Metal Oxide-film resistor
F: nonflammable
- COILS
uH: uH
- SEMICONDUCTORS
In each case, u: μ , for example:
uA..., μ A..., uPA..., μ PA...,
uPB..., μ PB..., uPC..., μ PC...,
uPD..., μ PD...

- The components identified by mark or dotted line with mark  are critical for safety. Replace only with part number specified.

AUDIO

BD (CD)

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
* CN105	1-564-518-11	PLUG, CONNECTOR 3P		R326	1-218-867-11	RES-CHIP 6.8K 5%	1/10W
* CN106	1-568-934-11	PIN, CONNECTOR 7P		R327	1-249-433-11	CARBON 22K 5%	1/4W
* CN108	1-568-943-11	PIN, CONNECTOR 5P		R331	1-216-821-11	METAL CHIP 1K 5%	1/16W
		< DIODE >		R332	1-216-833-11	METAL CHIP 10K 5%	1/16W
				R333	1-216-833-11	METAL CHIP 10K 5%	1/16W
D101	8-719-200-82	DIODE 11ES2-TA1B		R334	1-216-821-11	METAL CHIP 1K 5%	1/16W
D102	8-719-210-21	DIODE 11EQS04-TA1B		R335	1-216-835-11	METAL CHIP 15K 5%	1/16W
D103	8-719-988-61	DIODE 1SS355TE-17		R336	1-216-833-11	METAL CHIP 10K 5%	1/16W
D104	8-719-988-61	DIODE 1SS355TE-17		R338	1-216-845-11	METAL CHIP 100K 5%	1/16W
D105	8-719-988-61	DIODE 1SS355TE-17		△ R339	1-249-405-11	CARBON 100 5%	1/4W F
D111	8-719-109-85	DIODE MTZJ-T-77-5.1B (AEP, UK)		R340	1-216-845-11	METAL CHIP 100K 5%	1/16W
D301	8-719-988-61	DIODE 1SS355TE-17		R341	1-216-845-11	METAL CHIP 100K 5%	1/16W
D343	8-719-988-61	DIODE 1SS355TE-17		R343	1-216-845-11	METAL CHIP 100K 5%	1/16W
D393	8-719-988-61	DIODE 1SS355TE-17		R344	1-247-903-00	CARBON 1M 5%	1/4W
		< TERMINAL >		R352	1-216-821-11	METAL CHIP 1K 5%	1/16W
EPT102	1-537-771-21	TERMINAL BOARD, GROUND		R353	1-216-845-11	METAL CHIP 100K 5%	1/16W
		< IC >		R354	1-216-821-11	METAL CHIP 1K 5%	1/16W
				R359	1-216-845-11	METAL CHIP 100K 5%	1/16W
IC301	8-759-494-40	IC M62428AFP600C		R362	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
IC302	8-759-167-88	IC M5218AP		R363	1-218-296-11	RES-CHIP 75K 5%	1/10W
		< JUMPER RESISTOR >		R364	1-216-839-11	METAL CHIP 33K 5%	1/16W
				R365	1-216-857-11	METAL CHIP 1M 5%	1/16W
JR303	1-216-864-11	METAL CHIP 0 5%	1/16W	R366	1-249-441-11	CARBON 100K 5%	1/4W
JR304	1-216-864-11	METAL CHIP 0 5%	1/16W	R367	1-216-837-11	METAL CHIP 22K 5%	1/16W
JR305	1-216-864-11	METAL CHIP 0 5%	1/16W	R381	1-216-821-11	METAL CHIP 1K 5%	1/16W
JR306	1-216-864-11	METAL CHIP 0 5%	1/16W	R382	1-216-833-11	METAL CHIP 10K 5%	1/16W
JR307	1-216-864-11	METAL CHIP 0 5%	1/16W	R383	1-216-833-11	METAL CHIP 10K 5%	1/16W
		< TRANSISTOR >		R384	1-216-821-11	METAL CHIP 1K 5%	1/16W
Q101	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		R385	1-216-835-11	METAL CHIP 15K 5%	1/16W
Q102	8-729-424-08	TRANSISTOR UN2111-TX		R386	1-216-833-11	METAL CHIP 10K 5%	1/16W
Q103	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF		R388	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q104	8-729-040-20	TRANSISTOR RT1P137L-TP		R393	1-216-845-11	METAL CHIP 100K 5%	1/16W
Q105	8-729-421-22	TRANSISTOR UN2211-TX		A-4476-934-A BD(CD) BOARD, COMPLETE			
Q151	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		*****			
Q311	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		7-685-852-04	SCREW +BVTT 2X5 (S)		
Q331	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO			< CAPACITOR >		
Q361	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6		C101	1-164-315-11	CERAMIC CHIP 470PF 5.00% 50V	
Q381	8-729-046-97	TRANSISTOR 2SD1938(F)-T(TX).SO		C102	1-107-826-11	CERAMIC CHIP 0.1uF 10.00% 16V	
		< RESISTOR >		C103	1-164-315-11	CERAMIC CHIP 470PF 5.00% 50V	
R302	1-216-821-11	METAL CHIP 1K 5%	1/16W	C104	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
R303	1-216-845-11	METAL CHIP 100K 5%	1/16W	C107	1-162-921-11	CERAMIC CHIP 33PF 5% 50V	
R304	1-216-821-11	METAL CHIP 1K 5%	1/16W	C108	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
R309	1-216-845-11	METAL CHIP 100K 5%	1/16W	C109	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
R312	1-216-829-11	METAL CHIP 4.7K 5%	1/16W	C110	1-107-826-11	CERAMIC CHIP 0.1uF 10.00% 16V	
R313	1-218-296-11	RES-CHIP 75K 5%	1/10W	C111	1-124-589-11	ELECT 47uF 20% 16V	
R314	1-216-839-11	METAL CHIP 33K 5%	1/16W	C112	1-124-589-11	ELECT 47uF 20% 16V	
R315	1-216-857-11	METAL CHIP 1M 5%	1/16W	C113	1-124-584-00	ELECT 100uF 20% 10V	
R316	1-249-441-11	CARBON 100K 5%	1/4W	C114	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
R317	1-216-837-11	METAL CHIP 22K 5%	1/16W	C115	1-124-589-11	ELECT 47uF 20% 16V	
R321	1-216-839-11	METAL CHIP 33K 5%	1/16W	C117	1-164-360-11	CERAMIC CHIP 0.1uF 16V	
R322	1-216-857-11	METAL CHIP 1M 5%	1/16W	C118	1-115-156-11	CERAMIC CHIP 1uF 10V	
R323	1-216-821-11	METAL CHIP 1K 5%	1/16W				
R324	1-216-821-11	METAL CHIP 1K 5%	1/16W				
R325	1-216-821-11	METAL CHIP 1K 5%	1/16W				

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

HCD-C7NT

BD (CD)

Ref. No.	Part No.	Description	Remarks			Ref. No.	Part No.	Description	Remarks		
C119	1-115-156-11	CERAMIC CHIP	1uF		10V	IC101 IC102 IC103 IC1102	8-752-408-73 8-759-536-50 8-752-089-74 8-759-598-69	< IC > IC CXD3068Q IC BA5982FP-E2 IC CXA2581N-T4 IC BA6956AN			
C120	1-126-513-11	ELECT	47uF	20.00%	6.3V						
C154	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C159	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V						
C161	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C162	1-162-974-11	CERAMIC CHIP	0.01uF		50V	< JUMPER RESISTOR >					
C164	1-128-499-11	ELECT	220uF	20.00%	16V						
C180	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
C181	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
C182	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
C183	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	< TRANSISTOR >					
C184	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V						
C185	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V						
C186	1-126-934-11	ELECT	220uF	20.00%	10V						
C187	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C188	1-162-974-11	CERAMIC CHIP	0.01uF		50V	< RESISTOR >					
C191	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V						
C192	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V						
C193	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V						
C194	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V						
C201	1-126-934-11	ELECT	220uF	20.00%	10V	Q101 Q102 Q103	8-729-049-31 8-729-015-74 8-729-920-85	TRANSISTOR TRANSISTOR TRANSISTOR	2SB710A-RTX UN5111-TX 2SD1664-T100-QR		
C202	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C203	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V						
C204	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V						
C205	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C206	1-162-927-11	CERAMIC CHIP	100PF	5%	50V	R102 R103 R104 R105 R109	1-216-835-11 1-216-845-11 1-216-835-11 1-216-821-11 1-216-846-11	METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP	15K 100K 15K 1K 120K	5% 5% 5% 5% 5%	1/16W 1/16W 1/16W 1/16W 1/16W
C209	1-162-927-11	CERAMIC CHIP	100PF	5%	50V						
C211	1-107-826-11	CERAMIC CHIP	0.1uF	10.00%	16V						
C212	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V						
C213	1-162-967-11	CERAMIC CHIP	0.0033uF	10%	50V						
C215	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V	R111 R113 R114 R115 R116	1-216-846-11 1-216-827-11 1-216-845-11 1-216-841-11 1-216-841-11	METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP	120K 3.3K 100K 47K 47K	5% 5% 5% 5% 5%	1/16W 1/16W 1/16W 1/16W 1/16W
C216	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V						
C221	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C222	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C224	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C227	1-164-360-11	CERAMIC CHIP	0.1uF		16V	R117 R118 R120 R122 R123	1-216-847-11 1-216-835-11 1-216-849-11 1-216-845-11 1-216-797-11	METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP	150K 15K 220K 100K 10	5% 5% 5% 5% 5%	1/16W 1/16W 1/16W 1/16W 1/16W
C228	1-115-156-11	CERAMIC CHIP	1uF		10V						
C229	1-164-360-11	CERAMIC CHIP	0.1uF		16V						
C230	1-126-382-11	ELECT	100uF	20.00%	6.3V						
C231	1-126-934-11	ELECT	220uF	20.00%	10V						
C234	1-162-974-11	CERAMIC CHIP	0.01uF		50V	R124 R125 R126 R158 R159	1-216-798-11 1-216-834-11 1-216-834-11 1-216-833-11 1-216-841-11	RES-CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP	12 12K 12K 10K 47K	5% 5% 5% 5% 5%	1/10W 1/16W 1/16W 1/16W 1/16W
C235	1-162-974-11	CERAMIC CHIP	0.01uF		50V						
C236	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V						
C237	1-117-863-11	CERAMIC CHIP	0.47uF	10.00%	6.3V						
C240	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V						
C1109	1-164-360-11	CERAMIC CHIP	0.1uF		16V	R181 R182 R183 R184 R185 R186 R187 R188	1-216-847-11 1-216-845-11 1-216-846-11 1-216-843-11 1-216-843-11 1-216-849-11 1-216-849-11 1-216-843-11 1-216-843-11 1-216-845-11	METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP METAL CHIP	150K 100K 120K 68K 68K 220K 220K 68K 68K 100K	5% 5% 5% 5% 5% 5% 5% 5% 5% 5%	1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W 1/16W
C1110	1-126-934-11	ELECT	220uF	20.00%	10V						
C1111	1-162-974-11	CERAMIC CHIP	0.01uF		50V						
< CONNECTOR >											
CN101	1-784-751-11	CONNECTOR, FFC 29P									
CN103	1-815-510-11	CONNECTOR, BOARD TO BOARD 26P									
< DIODE >											
D101	8-719-056-77	DIODE UDZ-TE-17-3.9B									
< FERRITE BEAD >											
FB101	1-500-445-21	FERRITE	0UH								
						R189	1-216-845-11	METAL CHIP	100K	5%	1/16W
						R190	1-216-837-11	METAL CHIP	22K	5%	1/16W
						R191	1-216-837-11	METAL CHIP	22K	5%	1/16W
						R192	1-216-837-11	METAL CHIP	22K	5%	1/16W
						R193	1-216-837-11	METAL CHIP	22K	5%	1/16W
						R196	1-216-839-11	METAL CHIP	33K	5%	1/16W
						R197	1-216-839-11	METAL CHIP	33K	5%	1/16W
						R198	1-216-841-11	METAL CHIP	47K	5%	1/16W
						R199	1-216-841-11	METAL CHIP	47K	5%	1/16W
						R201	1-216-839-11	METAL CHIP	33K	5%	1/16W
						R202	1-216-833-11	METAL CHIP	10K	5%	1/16W
						R203	1-216-845-11	METAL CHIP	100K	5%	1/16W
						R204	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
						R205	1-216-821-11	METAL CHIP	1K	5%	1/16W
						R206	1-216-833-11	METAL CHIP	10K	5%	1/16W

BD (CD)

BD (MD)

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
R207	1-216-857-11	METAL CHIP	1M	5%	1/16W		C121	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R212	1-216-813-11	METAL CHIP	220	5%	1/16W		C125	1-117-720-11	CERAMIC CHIP	4.7uF			10V
R215	1-216-864-11	METAL CHIP	0	5%	1/16W		C128	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R216	1-216-813-11	METAL CHIP	220	5%	1/16W		C131	1-117-720-11	CERAMIC CHIP	4.7uF			10V
R217	1-216-829-11	METAL CHIP	4.7K	5%	1/16W		C132	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R218	1-216-821-11	METAL CHIP	1K	5%	1/16W		C133	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R219	1-216-833-11	METAL CHIP	10K	5%	1/16W		C141	1-126-206-11	ELECT CHIP	100uF	20%		6.3V
R220	1-216-864-11	METAL CHIP	0	5%	1/16W		C142	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R221	1-216-813-11	METAL CHIP	220	5%	1/16W		C143	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R226	1-216-809-11	METAL CHIP	100	5%	1/16W		C144	1-162-970-11	CERAMIC CHIP	0.01uF	10%		25V
R227	1-216-845-11	METAL CHIP	100K	5%	1/16W		C145	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R228	1-216-853-11	METAL CHIP	470K	5%	1/16W		C151	1-117-370-11	CERAMIC CHIP	10uF			10V
R229	1-216-825-11	METAL CHIP	2.2K	5%	1/16W		C152	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R230	1-216-789-11	METAL CHIP	2.2	5%	1/16W		C153	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R231	1-216-825-11	METAL CHIP	2.2K	5%	1/16W		C154	1-126-206-11	ELECT CHIP	100uF	20%		6.3V
R302	1-216-837-11	METAL CHIP	22K	5%	1/16W		C155	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R303	1-216-837-11	METAL CHIP	22K	5%	1/16W		C156	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R304	1-216-837-11	METAL CHIP	22K	5%	1/16W		C157	1-164-156-11	CERAMIC CHIP	0.1uF			25V
R305	1-216-837-11	METAL CHIP	22K	5%	1/16W		C158	1-162-927-11	CERAMIC CHIP	100PF	5%		50V
R1133	1-216-813-11	METAL CHIP	220	5%	1/16W		C159	1-162-927-11	CERAMIC CHIP	100PF	5%		50V
R1134	1-216-821-11	METAL CHIP	1K	5%	1/16W		C160	1-162-927-11	CERAMIC CHIP	100PF	5%		50V
		< COMPOSITION CIRCUIT BLOCK >					C161	1-162-970-11	CERAMIC CHIP	0.01uF	10%		25V
							C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%		25V
RN201	1-233-576-11	RES, CHIP NETWORK 100					C163	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%		10V
RN202	1-233-576-11	RES, CHIP NETWORK 100					C164	1-162-927-11	CERAMIC CHIP	100PF	5%		50V
							C165	1-162-966-11	CERAMIC CHIP	0.0022uF	10%		50V
		< VARIABLE RESISTOR >					C166	1-125-891-11	CERAMIC CHIP	0.47uF	10.00%		10V
							C167	1-164-245-11	CERAMIC CHIP	0.015uF	10.00%		25V
RV101	1-238-602-11	RES, ADJ, CARBON 47K					C169	1-164-156-11	CERAMIC CHIP	0.1uF			25V
							C173	1-164-156-11	CERAMIC CHIP	0.1uF			25V
		< VIBRATOR >					C174	1-162-970-11	CERAMIC CHIP	0.01uF	10%		25V
X201	1-579-834-11	VIBRATOR, CRYSTAL (33.8688MHz)					C180	1-117-370-11	CERAMIC CHIP	10uF			10V
*****							C181	1-126-206-11	ELECT CHIP	100uF	20%		6.3V
							C182	1-163-038-91	CERAMIC CHIP	0.1uF			25V
	A-4726-972-A	BD(MD) BOARD, COMPLETEED					C183	1-164-156-11	CERAMIC CHIP	0.1uF			25V
		*****					C184	1-117-970-11	ELECT CHIP	22uF	20.00%		10V
							C185	1-128-795-91	ELECT CHIP	470PF	10%		630V
		< CAPACITOR >					C191	1-126-206-11	ELECT CHIP	100uF	20%		6.3V
C101	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V		C192	1-164-156-11	CERAMIC CHIP	0.1uF			25V
C102	1-135-259-11	TANTAL. CHIP	10uF	20.00%	6.3V		C193	1-126-206-11	ELECT CHIP	100uF	20%		6.3V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V								
C104	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V		C194	1-164-156-11	CERAMIC CHIP	0.1uF			25V
C105	1-115-416-11	CERAMIC CHIP	0.001uF	5.00%	25V		C195	1-164-156-11	CERAMIC CHIP	0.1uF			25V
C106	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		C196	1-164-156-11	CERAMIC CHIP	0.1uF			25V
C107	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		C1401	1-117-720-11	CERAMIC CHIP	4.7uF			10V
C108	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V				< CONNECTOR >				
C109	1-164-677-11	CERAMIC CHIP	0.033uF	10.00%	16V		CN101	1-766-833-21	CONNECTOR, FFC/FPC (ZIF) 21P				
C110	1-163-038-91	CERAMIC CHIP	0.1uF		25V		CN102	1-784-835-21	CONNECTOR,FFC(LIF(NON-ZIF))27P				
C111	1-117-720-11	CERAMIC CHIP	4.7uF		10V		CN103	1-784-834-21	CONNECTOR,FFC(LIF(NON-ZIF))23P				
C112	1-110-563-11	CERAMIC CHIP	0.068uF	10.00%	16V	*	CN104	1-580-055-21	PIN, CONNECTOR (SMD) 2P				
C113	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V		CN105	1-784-859-21	CONNECTOR, FFC(LIF(NON-ZIF))7P				
C114	1-125-837-91	CERAMIC CHIP	1uF	10%	6.3V				< DIODE >				
C115	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V								
C116	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V		D101	8-719-988-61	DIODE 1SS355TE-17				
C117	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		D181	8-719-046-86	DIODE F1J6TP				
C118	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V		D183	8-719-046-86	DIODE F1J6TP				
C119	1-165-176-11	CERAMIC CHIP	0.047uF	10.00%	16V								
C120	1-164-156-11	CERAMIC CHIP	0.1uF		25V								

HCD-C7NT

BD (MD)

Ref. No.	Part No.	Description	Remarks
< IC >			
IC101	8-752-080-95	IC CXA2523AR	
IC102	8-759-473-51	IC TLV2361CDBV	
IC141	8-759-836-79	IC BH6519FS-E2	
IC151	8-752-404-64	IC CXD2662R	
IC152	6-700-052-01	IC MSM51V17400F-50TS-K	
IC181	8-759-481-17	IC MC74ACT08DTR2	
IC190	8-759-677-64	IC L88M35T	
☆ IC195	-----	IC BR24C16F-E2	
< JUMPER RESISTOR >			
JW201	1-216-295-91	SHORT CHIP	0
JW202	1-216-295-91	SHORT CHIP	0
JW203	1-216-295-91	SHORT CHIP	0
JW903	1-216-295-91	SHORT CHIP	0
JW904	1-216-295-91	SHORT CHIP	0
< COIL >			
L101	1-500-245-11	FERRITE	0uH
L102	1-500-245-11	FERRITE	0uH
L103	1-500-245-11	FERRITE	0uH
L105	1-414-235-22	FERRITE	0uH
L106	1-500-245-11	FERRITE	0uH
L121	1-500-245-11	FERRITE	0uH
L122	1-500-245-11	FERRITE	0uH
L131	1-500-245-11	FERRITE	0uH
L141	1-216-296-11	SHORT CHIP	0
L142	1-216-296-11	SHORT CHIP	0
L143	1-216-296-11	SHORT CHIP	0
L144	1-216-296-11	SHORT CHIP	0
L145	1-216-296-11	SHORT CHIP	0
L146	1-469-855-21	FERRITE	0uH
L147	1-469-855-21	FERRITE	0uH
L161	1-500-245-11	FERRITE	0uH
L171	1-500-245-11	FERRITE	0uH
L180	1-469-855-21	FERRITE	0uH
L181	1-469-855-21	FERRITE	0uH
L182	1-500-245-11	FERRITE	0uH
L183	1-216-296-11	SHORT CHIP	0
L184	1-216-296-11	SHORT CHIP	0
< TRANSISTOR >			
Q101	8-729-403-35	TRANSISTOR	UN5113-TX
Q121	8-729-403-35	TRANSISTOR	UN5113-TX
Q122	8-729-101-07	TRANSISTOR	2SB798-T1DK
Q131	8-729-026-53	TRANSISTOR	2SA1576A-T106-QR
Q132	8-729-903-10	TRANSISTOR	FMW1-T-148
Q133	8-729-402-93	TRANSISTOR	UN5214-TX
Q134	8-729-402-93	TRANSISTOR	UN5214-TX
Q181	8-729-048-87	TRANSISTOR	2SJ518AZTR
Q182	8-729-048-88	TRANSISTOR	2SK2788VYTR

Ref. No.	Part No.	Description	Remarks
< RESISTOR >			
R101	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R102	1-216-853-11	METAL CHIP	470K 5% 1/16W
R103	1-216-863-11	RES-CHIP	3.3M 5% 1/10W
R104	1-216-853-11	METAL CHIP	470K 5% 1/16W
R105	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R106	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R107	1-216-825-11	METAL CHIP	2.2K 5% 1/16W
R108	1-216-833-11	METAL CHIP	10K 5% 1/16W
R109	1-216-845-11	METAL CHIP	100K 5% 1/16W
R110	1-216-845-11	METAL CHIP	100K 5% 1/16W
R111	1-216-833-11	METAL CHIP	10K 5% 1/16W
R112	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R113	1-216-833-11	METAL CHIP	10K 5% 1/16W
R114	1-216-827-11	METAL CHIP	3.3K 5% 1/16W
R115	1-216-833-11	METAL CHIP	10K 5% 1/16W
R116	1-216-839-11	METAL CHIP	33K 5% 1/16W
R117	1-216-837-11	METAL CHIP	22K 5% 1/16W
R118	1-218-855-11	METAL CHIP	2.2K 0.5% 1/10W
R119	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W
R120	1-218-889-11	METAL CHIP	56K 0.5% 1/10W
R121	1-218-863-11	METAL CHIP	4.7K 0.5% 1/10W
R122	1-218-855-11	METAL CHIP	2.2K 0.5% 1/10W
R123	1-216-819-11	METAL CHIP	680 5% 1/16W
R124	1-216-809-11	METAL CHIP	100 5% 1/16W
R125	1-216-815-11	METAL CHIP	330 5% 1/16W
R126	1-216-819-11	METAL CHIP	680 5% 1/16W
R127	1-216-845-11	METAL CHIP	100K 5% 1/16W
R128	1-219-724-11	METAL CHIP	1 1% 1/4W
R129	1-216-298-00	METAL CHIP	2.2 5% 1/10W
R130	1-216-829-11	METAL CHIP	4.7K 5% 1/16W
R131	1-216-833-11	METAL CHIP	10K 5% 1/16W
R132	1-216-840-11	METAL CHIP	39K 5% 1/16W
R133	1-216-821-11	METAL CHIP	1K 5% 1/16W
R134	1-216-821-11	METAL CHIP	1K 5% 1/16W
R135	1-216-821-11	METAL CHIP	1K 5% 1/16W
R136	1-216-302-00	METAL CHIP	2.7 5% 1/10W
R138	1-216-833-11	METAL CHIP	10K 5% 1/16W
R150	1-216-833-11	METAL CHIP	10K 5% 1/16W
R151	1-216-833-11	METAL CHIP	10K 5% 1/16W
R153	1-216-833-11	METAL CHIP	10K 5% 1/16W
R155	1-216-864-11	METAL CHIP	0 5% 1/16W
R156	1-216-864-11	METAL CHIP	0 5% 1/16W
R157	1-216-809-11	METAL CHIP	100 5% 1/16W
R158	1-216-809-11	METAL CHIP	100 5% 1/16W
R159	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
R160	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
R161	1-162-919-11	CERAMIC CHIP	22PF 5% 50V
R163	1-216-809-11	METAL CHIP	100 5% 1/16W
R164	1-216-809-11	METAL CHIP	100 5% 1/16W
R165	1-216-809-11	METAL CHIP	100 5% 1/16W
R166	1-216-809-11	METAL CHIP	100 5% 1/16W
R167	1-216-833-11	METAL CHIP	10K 5% 1/16W
R168	1-216-845-11	METAL CHIP	100K 5% 1/16W
R169	1-216-855-11	METAL CHIP	680K 5% 1/16W
R170	1-216-827-11	METAL CHIP	3.3K 5% 1/16W

☆ IC195 is a written in and settled EEPROM. Supply with a single article has not been carried out. In case you exchange by BD board (A-4726-972-A), please put on IC195 currently used with the model again.

BD (MD)

CONNECTOR

HP

JACK

MD DIGITAL

Ref. No.	Part No.	Description	Remarks		
R171	1-216-821-11	METAL CHIP	1K	5%	1/16W
R173	1-216-821-11	METAL CHIP	1K	5%	1/16W
R174	1-216-811-11	METAL CHIP	150	5%	1/16W
R177	1-216-805-11	METAL CHIP	47	5%	1/16W
R178	1-216-864-11	METAL CHIP	0	5%	1/16W
R179	1-216-295-91	SHORT CHIP	0		
R181	1-216-841-11	METAL CHIP	47K	5%	1/16W
R182	1-216-841-11	METAL CHIP	47K	5%	1/16W
R183	1-216-841-11	METAL CHIP	47K	5%	1/16W
R185	1-216-295-91	SHORT CHIP	0		
R195	1-216-833-11	METAL CHIP	10K	5%	1/16W
R196	1-216-833-11	METAL CHIP	10K	5%	1/16W
R197	1-216-833-11	METAL CHIP	10K	5%	1/16W
R218	1-216-864-11	METAL CHIP	0	5%	1/16W
< SWITCH >					
S101	1-762-596-21	SWITCH, PUSH (1 KEY) (LIMIT IN)			
S103	1-771-956-21	SWITCH, PUSH (1 KEY) (OUT)			
S104	1-771-955-21	SWITCH, PUSH (1 KEY) (PLAY)			
S105	1-771-955-21	SWITCH, PUSH (1 KEY) (REC)			
< VIBRATOR >					
X171	1-781-569-21	OSCILLATOR, CRYSTAL (90MHz)			

	1-682-100-11	CONNECTOR BOARD			

< CONNECTOR >					
CN1	1-815-750-11	CONNECTOR (TMK-W26X-A1)			

	1-683-333-13	HP BOARD			

< CAPACITOR >					
C337	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C338	1-162-294-31	CERAMIC	0.001uF	10%	50V
C339	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
< CONNECTOR >					
* CN109	1-568-954-11	PIN, CONNECTOR 5P			
CN110	1-506-469-11	PIN, CONNECTOR 4P			
< JACK >					
J103	1-794-702-11	JACK, HEADPHONE (PHONES)			
< TRANSISTOR >					
Q341	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO		
Q391	8-729-046-97	TRANSISTOR	2SD1938(F)-T(TX).SO		
< RESISTOR >					
R337	1-249-407-11	CARBON	150	5%	1/4W F
R342	1-249-429-11	CARBON	10K	5%	1/4W
R387	1-249-407-11	CARBON	150	5%	1/4W F
R392	1-216-833-11	METAL CHIP	10K	5%	1/16W

Ref. No.	Part No.	Description	Remarks		
	1-683-334-13	JACK BOARD *****			
		< CAPACITOR >			
C101	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C151	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
		< CONNECTOR >			
CN107	1-785-333-11	PIN, CONNECTOR (LIGHT ANGLE)7P			
		< JACK >			
J101	1-793-439-11	JACK (SMALL TYPE) (TAPE OUT)			
J102	1-793-439-11	JACK (SMALL TYPE) (TAPE IN)			
		< RESISTOR >			
R101	1-216-845-11	METAL CHIP	100K	5%	1/16W
R151	1-216-845-11	METAL CHIP	100K	5%	1/16W

	A-4727-479-A	MD DIGITAL BOARD, COMPLETE *****			
		< CAPACITOR >			
C1001	1-125-972-91	ELECT	100uF	20.00%	16V
C1002	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1003	1-125-972-91	ELECT	100uF	20.00%	16V
C1004	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1005	1-125-972-91	ELECT	100uF	20.00%	16V
C1006	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1007	1-125-972-91	ELECT	100uF	20.00%	16V
C1008	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1009	1-125-972-91	ELECT	100uF	20.00%	16V
C1010	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1011	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1012	1-125-972-91	ELECT	100uF	20.00%	16V
C1013	1-216-864-11	METAL CHIP	0	5%	1/16W
C1015	1-124-261-00	ELECT	10uF	20%	50V
C1016	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1018	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1020	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1024	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1025	1-162-918-11	CERAMIC CHIP	18PF	5.00%	50V
C1026	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C1027	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1028	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1029	1-125-972-91	ELECT	100uF	20.00%	16V
C1030	1-124-261-00	ELECT	10uF	20%	50V
C1031	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1032	1-125-972-91	ELECT	100uF	20.00%	16V
C1033	1-125-972-91	ELECT	100uF	20.00%	16V
C1034	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1035	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1036	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1037	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C1038	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1039	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1040	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C1041	1-115-869-11	ELECT	0.33uF	20.00%	50V

HCD-C7NT

MD DIGITAL

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description					Remarks
C1042	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D1014	8-719-210-39	DIODE	EC10QS-04-TE12L				
C1043	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D2001	8-719-988-61	DIODE	1SS355TE-17				
C1044	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V		D2002	8-719-988-61	DIODE	1SS355TE-17				
C1045	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D2003	8-719-988-61	DIODE	1SS355TE-17				
C1046	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D2004	8-719-988-61	DIODE	1SS355TE-17				
							D2005	8-719-988-61	DIODE	1SS355TE-17				
C1047	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D2006	8-719-988-61	DIODE	1SS355TE-17				
C1048	1-124-589-11	ELECT	47uF	20%	16V		D2007	8-719-988-61	DIODE	1SS355TE-17				
C1049	1-162-919-11	CERAMIC CHIP	22PF	5%	50V		D2008	8-719-988-61	DIODE	1SS355TE-17				
C1050	1-162-919-11	CERAMIC CHIP	22PF	5%	50V		D2009	8-719-988-61	DIODE	1SS355TE-17				
C1051	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1052	1-164-156-11	CERAMIC CHIP	0.1uF		25V		D2010	8-719-988-61	DIODE	1SS355TE-17				
C1053	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1054	1-125-972-91	ELECT	100uF	20.00%	16V					< TERMINAL >				
C1055	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1056	1-124-589-11	ELECT	47uF	20%	16V		EP1001	1-537-771-21	TERMINAL BOARD, GROUND					
							EP1002	1-537-771-21	TERMINAL BOARD, GROUND					
C1057	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1058	1-164-156-11	CERAMIC CHIP	0.1uF		25V					< FERRITE BEAD/RESISTOR >				
C1059	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1060	1-164-156-11	CERAMIC CHIP	0.1uF		25V		FB1001	1-469-324-21	FERRITE	0UH				
C1061	1-216-864-11	METAL CHIP	0	5%	1/16W		FB1002	1-216-864-11	METAL CHIP	0	5%	1/16W		
							FB1003	1-216-864-11	METAL CHIP	0	5%	1/16W		
							FB1004	1-469-324-21	FERRITE	0UH				
C1062	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1063	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1064	1-164-156-11	CERAMIC CHIP	0.1uF		25V					< IC >				
C1065	1-125-972-91	ELECT	100uF	20.00%	16V		IC1002	8-752-415-60	IC	CXD1873R				
C1066	1-128-131-11	ELECT	22uF	20.00%	50V		IC1003	6-801-635-01	IC	M30833FJGP-C7N-2				
							IC1004	6-801-634-01	IC	MB89595CPFV-G-122-BND				
C1067	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V		IC1005	6-801-397-01	IC	MB89537ACPFM-G-310-BND				
C1068	1-162-915-11	CERAMIC CHIP	10PF	0.5PF	50V		IC1006	6-701-843-01	IC	CXD9692R				
C1069	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1070	1-164-156-11	CERAMIC CHIP	0.1uF		25V		IC1007	8-759-713-24	IC	PCM2702E/2K				
C1073	1-162-919-11	CERAMIC CHIP	22PF	5%	50V		IC1008	8-759-460-72	IC	BA033FP-E2				
							IC1009	8-759-565-74	IC	M62016FP-E1				
C1074	1-162-919-11	CERAMIC CHIP	22PF	5%	50V		IC1011	8-759-481-19	IC	LB1830M-S-TE-L				
C1075	1-164-156-11	CERAMIC CHIP	0.1uF		25V		IC1012	8-759-671-94	IC	MC74HC4053AFEL				
C1077	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1078	1-164-156-11	CERAMIC CHIP	0.1uF		25V									
C1100	1-124-589-11	ELECT	47uF	20%	16V		IC1014	8-749-018-68	IC	PST592E-T				
							IC1015	8-749-018-68	IC	PST592E-T				
C1101	1-124-589-11	ELECT	47uF	20%	16V									
C1102	1-124-589-11	ELECT	47uF	20%	16V					< COIL/FERRITE BEED >				
C1103	1-124-589-11	ELECT	47uF	20%	16V									
C2005	1-162-927-11	CERAMIC CHIP	100PF	5%	50V		L201	1-469-324-21	FERRITE	0uH				
C2006	1-162-927-11	CERAMIC CHIP	100PF	5%	50V		L202	1-469-324-21	FERRITE	0uH				
							L203	1-469-324-21	FERRITE	0uH				
C2007	1-162-927-11	CERAMIC CHIP	100PF	5%	50V		L204	1-469-324-21	FERRITE	0uH				
C2010	1-162-927-11	CERAMIC CHIP	100PF	5%	50V		L1001	1-412-533-21	INDUCTOR	47uH				
C2011	1-162-927-11	CERAMIC CHIP	100PF	5%	50V									
C2012	1-162-927-11	CERAMIC CHIP	100PF	5%	50V		L1008	1-500-445-21	FERRITE	0uH				
< CONNECTOR >										< LINE FILTER >				
CN1001	1-790-669-21	PIN, CONNECTOR (PC BOARD) 9P					LF1001	1-419-521-21	INDUCTOR	0uH				
CN1002	1-784-780-11	CONNECTOR, FFC 19P												
CN1003	1-778-315-11	PIN, CONNECTOR (PC BOARD) 5P								< TRANSISTOR >				
CN1004	1-784-384-11	CONNECTOR, FFC/FPC 27P												
CN1005	1-793-991-11	CONNECTOR, FFC/FPC 23P					Q1001	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6				
							Q1002	8-729-015-76	TRANSISTOR	UN5211-TX				
< DIODE >										< RESISTOR >				
D1004	8-719-988-61	DIODE	1SS355TE-17											
D1005	8-719-988-61	DIODE	1SS355TE-17					R1001	1-216-809-11	METAL CHIP	100	5%	1/16W	
D1006	8-719-988-61	DIODE	1SS355TE-17					R1002	1-216-809-11	METAL CHIP	100	5%	1/16W	
D1010	8-719-988-61	DIODE	1SS355TE-17					R1005	1-216-809-11	METAL CHIP	100	5%	1/16W	
D1013	8-719-988-61	DIODE	1SS355TE-17					R1006	1-216-809-11	METAL CHIP	100	5%	1/16W	
							R1008	1-216-817-11	METAL CHIP	470	5%	1/16W		

MD DIGITAL

PANEL

Ref. No.	Part No.	Description			Remarks	Ref. No.	Part No.	Description			Remarks
R1009	1-216-864-11	METAL CHIP	0	5%	1/16W	R1080	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1010	1-216-864-11	METAL CHIP	0	5%	1/16W	R1081	1-216-864-11	METAL CHIP	0	5%	1/16W
R1012	1-218-874-11	METAL CHIP	13K	0.5%	1/10W	R1082	1-216-864-11	METAL CHIP	0	5%	1/16W
R1016	1-216-857-11	METAL CHIP	1M	5%	1/16W	R1083	1-216-864-11	METAL CHIP	0	5%	1/16W
R1017	1-216-799-11	METAL CHIP	15	5%	1/16W	R1084	1-216-864-11	METAL CHIP	0	5%	1/16W
R1018	1-216-799-11	METAL CHIP	15	5%	1/16W	R1088	1-216-864-11	METAL CHIP	0	5%	1/16W
R1019	1-216-799-11	METAL CHIP	15	5%	1/16W	R1089	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R1020	1-216-809-11	METAL CHIP	100	5%	1/16W	R1090	1-218-867-11	RES-CHIP	6.8K	5%	1/10W
R1021	1-216-809-11	METAL CHIP	100	5%	1/16W	R1091	1-216-823-11	METAL CHIP	1.5K	5%	1/16W
R1022	1-216-809-11	METAL CHIP	100	5%	1/16W	R1092	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1024	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1094	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1025	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1095	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1026	1-216-837-11	METAL CHIP	22K	5%	1/16W	R1096	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1027	1-216-821-11	METAL CHIP	1K	5%	1/16W	R1097	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1028	1-216-864-11	METAL CHIP	0	5%	1/16W	R1101	1-216-864-11	METAL CHIP	0	5%	1/16W
R1029	1-216-864-11	METAL CHIP	0	5%	1/16W	R1110	1-216-809-11	METAL CHIP	100	5%	1/16W
R1030	1-216-813-11	METAL CHIP	220	5%	1/16W	R1111	1-216-809-11	METAL CHIP	100	5%	1/16W
R1031	1-216-813-11	METAL CHIP	220	5%	1/16W	R1120	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1032	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1125	1-216-864-11	METAL CHIP	0	5%	1/16W
R1033	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1126	1-216-864-11	METAL CHIP	0	5%	1/16W
R1034	1-216-813-11	METAL CHIP	220	5%	1/16W	R1127	1-216-864-11	METAL CHIP	0	5%	1/16W
R1035	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1128	1-216-864-11	METAL CHIP	0	5%	1/16W
R1036	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1129	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R1037	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1130	1-216-833-11	METAL CHIP	10K	5%	1/16W
R1038	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1140	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1039	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1141	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1040	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1142	1-216-835-11	METAL CHIP	15K	5%	1/16W
R1041	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1143	1-216-835-11	METAL CHIP	15K	5%	1/16W
					(KR)	R1150	1-216-821-11	METAL CHIP	1K	5%	1/16W
R1042	1-216-833-11	METAL CHIP	10K	5%	1/16W	R1200	1-216-864-11	METAL CHIP	0	5%	1/16W
R1045	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R1046	1-216-833-11	METAL CHIP	10K	5%	1/16W	R2001	1-216-857-11	METAL CHIP	1M	5%	1/16W
R1047	1-216-833-11	METAL CHIP	10K	5%	1/16W			< VIBRATOR >			
R1048	1-216-833-11	METAL CHIP	10K	5%	1/16W						
R1049	1-216-849-11	METAL CHIP	220K	5%	1/16W	X1002	1-760-337-21	VIBRATOR, CRYSTAL (12MHz)			
R1050	1-216-845-11	METAL CHIP	100K	5%	1/16W	X1003	1-579-175-11	VIBRATOR, CERAMIC (10MHz)			
						X1004	1-795-537-21	VIBRATOR, CRYSTAL (6MHz)			
R1051	1-216-837-11	METAL CHIP	22K	5%	1/16W	X1005	1-579-352-11	VIBRATOR, CERAMIC (12.5MHz)			
R1052	1-216-833-11	METAL CHIP	10K	5%	1/16W	X1007	1-760-337-21	VIBRATOR, CRYSTAL (12MHz)			
R1053	1-216-833-11	METAL CHIP	10K	5%	1/16W	*****					
R1054	1-216-833-11	METAL CHIP	10K	5%	1/16W		A-4727-470-A	PANEL BOARD, COMPLETE			
R1055	1-216-821-11	METAL CHIP	1K	5%	1/16W			*****			
R1056	1-216-822-11	METAL CHIP	1.2K	5%	1/16W						
R1057	1-216-823-11	METAL CHIP	1.5K	5%	1/16W		4-233-850-01	HOLDER (FL)			
R1058	1-216-864-11	METAL CHIP	0	5%	1/16W						
R1059	1-216-864-11	METAL CHIP	0	5%	1/16W			< CAPACITOR >			
R1060	1-216-864-11	METAL CHIP	0	5%	1/16W						
						C603	1-124-247-91	ELECT	10uF	20.00%	35V
R1061	1-216-864-11	METAL CHIP	0	5%	1/16W	C610	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1062	1-500-445-21	FERRITE	0UH			C611	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1063	1-216-802-11	RES-CHIP	27	5%	1/10W	C612	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1064	1-216-802-11	RES-CHIP	27	5%	1/10W	C613	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1065	1-216-823-11	METAL CHIP	1.5K	5%	1/16W						
						C614	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1067	1-216-833-11	METAL CHIP	10K	5%	1/16W	C615	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1068	1-216-839-11	METAL CHIP	33K	5%	1/16W	C616	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1069	1-218-867-11	RES-CHIP	6.8K	5%	1/10W	C617	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1071	1-216-833-11	METAL CHIP	10K	5%	1/16W	C618	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1073	1-216-833-11	METAL CHIP	10K	5%	1/16W						
						C619	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1074	1-216-833-11	METAL CHIP	10K	5%	1/16W	C620	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
R1076	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	C623	1-162-306-11	CERAMIC	0.01uF	30.00%	16V
R1077	1-216-802-11	RES-CHIP	27	5%	1/10W	C624	1-162-282-31	CERAMIC	100PF	10%	50V
R1078	1-216-802-11	RES-CHIP	27	5%	1/10W	C626	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
R1079	1-216-833-11	METAL CHIP	10K	5%	1/16W						

HCD-C7NT

PANEL

Ref. No.	Part No.	Description	Remarks
C635	1-124-247-91	ELECT 10uF 20.00% 35V	
C636	1-126-153-11	ELECT 22uF 20% 6.3V	
C637	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C640	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C641	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C642	1-162-306-11	CERAMIC 0.01uF 30.00% 16V	
C643	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C646	1-165-319-11	CERAMIC CHIP 0.1uF 50V	
C647	1-162-290-31	CERAMIC 470PF 10% 50V	
C648	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C649	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C650	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C651	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C652	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C653	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C654	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C655	1-162-960-11	CERAMIC CHIP 220PF 10% 50V	
C656	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C657	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C658	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C659	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C660	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C661	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C662	1-162-286-21	CERAMIC 220PF 10.00% 50V	
C664	1-124-247-91	ELECT 10uF 20.00% 35V	
C665	1-124-589-11	ELECT 47uF 20% 16V	
< CONNECTOR >			
* CN601	1-784-738-11	CONNECTOR, FFC 16P	
< DIODE >			
D601	8-719-300-71	DIODE SEL2210R-TP3 (STANDBY)	
D602	6-500-095-01	DIODE SELS5LED3C-STP15 (rec)	
D603	6-500-095-01	DIODE SELS5LED3C-STP15 (+)	
D604	6-500-095-01	DIODE SELS5LED3C-STP15 (-)	
D605	6-500-095-01	DIODE SELS5LED3C-STP15 (ejectCD)	
D606	6-500-095-01	DIODE SELS5LED3C-STP15 (play)	
D607	6-500-095-01	DIODE SELS5LED3C-STP15 (stop)	
D608	6-500-095-01	DIODE SELS5LED3C-STP15 (ff)	
D609	6-500-095-01	DIODE SELS5LED3C-STP15 (rew)	
D610	6-500-095-01	DIODE SELS5LED3C-STP15 (ejectMD)	
D611	6-500-095-01	DIODE SELS5LED3C-STP15 (NET MD)	
D612	6-500-095-01	DIODE SELS5LED3C-STP15 (NET MD)	
< FLUORESCENT INDICATOR TUBE >			
FL601	1-518-788-11	INDICATOR TUBE, FLUORESCENT	
< IC >			
IC601	8-759-297-23	IC M66004M8FP-200D	
IC602	8-759-827-69	IC NJL63H400A-1	
< TRANSISTOR >			
Q601	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
Q602	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
Q604	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	
Q605	8-729-120-28	TRANSISTOR 2SC3052EF-T1-LEF	

Ref. No.	Part No.	Description	Remarks
< RESISTOR >			
R601	1-249-441-11	CARBON 100K 5% 1/4W	
R602	1-249-441-11	CARBON 100K 5% 1/4W	
R603	1-249-417-11	CARBON 1K 5% 1/4W	F
R604	1-249-417-11	CARBON 1K 5% 1/4W	F
R607	1-249-441-11	CARBON 100K 5% 1/4W	
R608	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R609	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R610	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R611	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R612	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R614	1-216-820-11	METAL CHIP 820 5% 1/16W	
R615	1-216-820-11	METAL CHIP 820 5% 1/16W	
R616	1-216-820-11	METAL CHIP 820 5% 1/16W	
R617	1-216-820-11	METAL CHIP 820 5% 1/16W	
R618	1-216-820-11	METAL CHIP 820 5% 1/16W	
R619	1-216-820-11	METAL CHIP 820 5% 1/16W	
R620	1-216-820-11	METAL CHIP 820 5% 1/16W	
R621	1-216-820-11	METAL CHIP 820 5% 1/16W	
R622	1-216-820-11	METAL CHIP 820 5% 1/16W	
R623	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R624	1-249-433-11	CARBON 22K 5% 1/4W	
R625	1-216-817-11	METAL CHIP 470 5% 1/16W	
R626	1-216-817-11	METAL CHIP 470 5% 1/16W	
R627	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R628	1-249-433-11	CARBON 22K 5% 1/4W	
R639	1-216-797-11	METAL CHIP 10 5% 1/16W	
R640	1-249-417-11	CARBON 1K 5% 1/4W	F
R641	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R642	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R643	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R644	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R645	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R646	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R647	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R648	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R649	1-249-425-11	CARBON 4.7K 5% 1/4W	F
< SWITCH >			
S602	1-762-875-21	SWITCH, KEYBOARD (rec NORMAL CD SYNC)	
S603	1-762-875-21	SWITCH, KEYBOARD (-VOL)	
S604	1-762-875-21	SWITCH, KEYBOARD (+VOL)	
S605	1-762-875-21	SWITCH, KEYBOARD (recHIGH CD SYNC)	
S606	1-762-875-21	SWITCH, KEYBOARD (dengen)	
S607	1-762-875-21	SWITCH, KEYBOARD (ejectCD)	
S608	1-762-875-21	SWITCH, KEYBOARD (play)	
S609	1-762-875-21	SWITCH, KEYBOARD (stop)	
S610	1-762-875-21	SWITCH, KEYBOARD (recHIGH CD SYNC)	
S611	1-762-875-21	SWITCH, KEYBOARD (ejectMD)	
S612	1-762-875-21	SWITCH, KEYBOARD (ff TUNING-)	
S613	1-762-875-21	SWITCH, KEYBOARD (rew TUNING+)	
S614	1-762-875-21	SWITCH, KEYBOARD (NET MD)	

Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
	A-4727-468-A	POWER BOARD, COMPLETE (AEP, UK)		D985	8-719-200-82	DIODE 11ES2-TA1B	
	A-4727-482-A	POWER BOARD, COMPLETE (KR)		D991	8-719-991-33	DIODE 1SS133T-77	
		*****		D992	8-719-991-33	DIODE 1SS133T-77	
*	4-363-146-00	HEAT SINK, V.OUT		D993	8-719-991-33	DIODE 1SS133T-77	
		< CAPACITOR >				< IC >	
C902	1-126-767-11	ELECT	1000uF 20.00% 16V	IC901	8-759-231-57	IC TA7810S	
C903	1-126-964-11	ELECT	10uF 20.00% 50V	IC902	8-759-231-53	IC TA7805S	
C904	1-126-916-11	ELECT	1000uF 20.00% 6.3V	IC903	8-759-450-49	IC uPC2907HF	
C905	1-126-964-11	ELECT	10uF 20.00% 50V	IC904	8-759-231-53	IC TA7805S	
C906	1-126-926-11	ELECT	1000uF 20.00% 10V	IC905	8-759-231-53	IC TA7805S	
C907	1-126-964-11	ELECT	10uF 20.00% 50V	IC906	8-759-686-72	IC uPC29L04J-T	
C908	1-126-935-11	ELECT	470uF 20.00% 10V	IC907	8-759-647-11	IC uPC2905HF	
C909	1-126-964-11	ELECT	10uF 20.00% 50V	IC908	8-759-231-53	IC TA7805S	
C910	1-126-916-11	ELECT	1000uF 20.00% 6.3V			< LINE FILTER >	
C912	1-126-916-11	ELECT	1000uF 20.00% 6.3V	△ LF991	1-419-625-11	COIL, LINE FILTER	
C914	1-126-935-11	ELECT	470uF 20.00% 10V			< TRANSISTOR >	
C915	1-126-964-11	ELECT	10uF 20.00% 50V	Q971	8-729-209-60	TRANSISTOR 2SB1375	
C916	1-126-926-11	ELECT	1000uF 20.00% 10V	Q991	8-729-120-28	TRANSISTOR 2SC1623-T1-L5L6	
C922	1-126-933-11	ELECT	100uF 20.00% 16V			< RESISTOR >	
C961	1-136-165-00	FILM	0.1uF 5.00% 50V	R102	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C962	1-126-944-11	ELECT	3300uF 20.00% 25V	R103	1-216-833-11	METAL CHIP 10K 5% 1/16W	
C971	1-136-165-00	FILM	0.1uF 5.00% 50V	R104	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C974	1-126-968-11	ELECT	100uF 20.00% 50V	R105	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C975	1-126-964-11	ELECT	10uF 20.00% 50V	R111	1-249-411-11	CARBON 330 5% 1/4W	(AEP, UK)
C976	1-126-964-11	ELECT	10uF 20.00% 50V				
C981	1-136-165-00	FILM	0.1uF 5.00% 50V	R112	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
C982	1-136-165-00	FILM	0.1uF 5.00% 50V	R152	1-216-821-11	METAL CHIP 1K 5% 1/16W	
C983	1-135-933-11	ELECT	22000uF 20% 16V	R153	1-216-833-11	METAL CHIP 10K 5% 1/16W	
C984	1-128-548-11	ELECT	4700uF 20.00% 25V	R154	1-216-821-11	METAL CHIP 1K 5% 1/16W	
△ C991	1-113-925-11	CERAMIC	0.01uF 20.00% 250V	R155	1-216-845-11	METAL CHIP 100K 5% 1/16W	
C992	1-128-551-11	ELECT	22uF 20.00% 25V				
C994	1-164-159-21	CERAMIC	0.1uF 50V	△ R971	1-219-153-11	FUSIBLE 10 5% 1/4W	
		< CONNECTOR >		R972	1-260-103-11	CARBON 2.2K 5% 1/2W	
* CN901	1-774-629-11	CONNECTOR, BOARD TO BOARD 17P		R973	1-249-429-11	CARBON 10K 5% 1/4W	
CN902	1-770-726-11	CONNECTOR, BOARD TO BOARD 6P		R974	1-249-413-11	CARBON 470 5% 1/4W	F
CN991	1-564-321-00	PIN, CONNECTOR 2P		R975	1-249-413-11	CARBON 470 5% 1/4W	F
* CN992	1-564-321-21	PIN, CONNECTOR 2P		△ R981	1-219-119-11	FUSIBLE 0.1 5% 1/4W	
CN993	1-564-505-11	PLUG, CONNECTOR 2P		R982	1-240-877-11	FUSIBLE 0.15 5% 1/2W	
* CN995	1-564-511-11	PLUG, CONNECTOR 8P		R991	1-249-429-11	CARBON 10K 5% 1/4W	
		< DIODE >		R992	1-216-833-11	METAL CHIP 10K 5% 1/16W	
D921	8-719-200-82	DIODE 11ES2-TA1B		R993	1-249-413-11	CARBON 470 5% 1/4W	F
D961	8-719-200-82	DIODE 11ES2-TA1B		R994	1-249-413-11	CARBON 470 5% 1/4W	F
D962	8-719-200-82	DIODE 11ES2-TA1B		R995	1-216-055-00	METAL CHIP 1.8K 5% 1/10W	
D963	8-719-200-82	DIODE 11ES2-TA1B		R996	1-247-791-91	CARBON 22 5% 1/4W	
D964	8-719-200-82	DIODE 11ES2-TA1B		△ R997	1-217-637-00	FUSIBLE 1 5% 1/4W	
D971	8-719-200-82	DIODE 11ES2-TA1B				< RELAY >	
D972	8-719-200-82	DIODE 11ES2-TA1B		△ RY991	1-755-276-11	RELAY, POWER	
D973	8-719-200-82	DIODE 11ES2-TA1B				< TRANSFORMER >	
D974	8-719-200-82	DIODE 11ES2-TA1B		△ T901	1-437-243-11	TRANSFORMER, POWER (SUB) (AEP, UK)	
D975	8-719-982-24	DIODE MTZJ-T-77-33A		△ T901	1-437-245-11	TRANSFORMER, POWER (SUB) (KR)	
D976	8-719-921-40	DIODE MTZJ-T-77-4.7A				*****	
D981	8-719-028-23	DIODE D3SBA20-4101					
D982	8-719-200-82	DIODE 11ES2-TA1B					
D983	8-719-200-82	DIODE 11ES2-TA1B					
D984	8-719-200-82	DIODE 11ES2-TA1B					

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

HCD-C7NT

SW

UCOM

Ref. No.	Part No.	Description	Remarks
	1-682-099-11	SW BOARD *****	
		< SWITCH >	
S1	1-786-214-11	SWITCH (DETECTION) (DISC IN/8cm DISC DETECT)	
S2	1-786-213-11	SWITCH (DETECTION) (12cm DISC/12cm DISC EJECT END DETECT)	
S3	1-786-213-11	SWITCH (DETECTION) (DISC/CHACKING/RELEASE DETECT)	
S4	1-786-214-11	SWITCH (DETECTION) (8cm DISC EJECT END DETECT)	

	A-4727-467-A	UCOM BOARD, COMPLETE (AEP, UK)	
	A-4727-481-A	UCOM BOARD, COMPLETE (KR) *****	
	7-685-646-79	SCREW +BVTP 3X8 TYPE2 N-S	
		< BATTERY >	
BT921	1-528-938-11	BATTERY, LITHIUM ION SECONDARY	
		< CAPACITOR >	
C201	1-126-176-11	ELECT 220uF 20% 10V	
C202	1-119-774-11	ELECT 100uF 20.00% 16V	
C203	1-164-159-21	CERAMIC 0.1uF 50V	
C204	1-104-665-11	ELECT 100uF 20.00% 10V	
C206	1-119-941-91	ELECT 470uF 20.00% 6.3V	
C208	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C222	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C223	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C224	1-136-165-00	FILM 0.1uF 5.00% 50V	
C225	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C226	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C231	1-162-927-11	CERAMIC CHIP 100PF 5% 50V	
C241	1-127-820-11	CERAMIC 4.7uF 16V	
C243	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C244	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C294	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C501	1-126-916-11	ELECT 1000uF 20.00% 6.3V	
C502	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C503	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C504	1-126-160-11	ELECT 1uF 20% 50V	
C505	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C506	1-164-159-21	CERAMIC 0.1uF 50V	
C507	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C509	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C510	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C535	1-162-917-11	CERAMIC CHIP 15PF 5% 50V	
C536	1-162-920-11	CERAMIC CHIP 27PF 5% 50V	
C911	1-164-159-21	CERAMIC 0.1uF 50V	
C941	1-126-964-11	ELECT 10uF 20.00% 50V	
C942	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C943	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C993	1-119-941-91	ELECT 470uF 20.00% 6.3V	

Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >	
* CN201	1-784-738-11	CONNECTOR, FFC 16P	
CN202	1-784-780-11	CONNECTOR, FFC 19P	
CN203	1-764-698-11	SOCKET, CONNECTOR (NON ZIF)19P	
CN204	1-568-844-11	CONNECTOR, FFC 29P	
CN205	1-774-628-11	CONNECTOR, BOARD TO BOARD 17P	
* CN206	1-774-813-11	CONNECTOR, BOARD TO BOARD 7P	
CN208	1-774-281-11	CONNECTOR (DIN) 8P	
CN209	1-774-281-11	CONNECTOR (DIN) 8P	
* CN211	1-564-517-11	PLUG, CONNECTOR 2P	
CN212	1-506-469-11	PIN, CONNECTOR 4P	
CN220	1-815-194-11	CONNECTOR, USB (B)	
* CN222	1-564-508-11	PLUG, CONNECTOR 5P	
		< DIODE >	
D201	8-719-991-33	DIODE 1SS133T-77	
D202	8-719-988-61	DIODE 1SS355TE-17	
D203	8-719-991-33	DIODE 1SS133T-77	
D204	8-719-988-61	DIODE 1SS355TE-17	
D205	8-719-988-61	DIODE 1SS355TE-17	
D206	8-719-988-61	DIODE 1SS355TE-17	
D221	8-719-988-61	DIODE 1SS355TE-17	
D222	8-719-988-61	DIODE 1SS355TE-17	
D232	8-719-988-61	DIODE 1SS355TE-17	
D241	8-719-988-61	DIODE 1SS355TE-17	
D242	8-719-988-61	DIODE 1SS355TE-17	
D513	8-719-988-61	DIODE 1SS355TE-17	
D910	8-719-921-40	DIODE MTZJ-T-77-4.7B	
D923	8-719-991-33	DIODE 1SS133T-77	
D924	8-719-991-33	DIODE 1SS133T-77	
D925	8-719-988-61	DIODE 1SS355TE-17	
D926	8-719-988-61	DIODE 1SS355TE-17	
D927	8-719-988-61	DIODE 1SS355TE-17	
D941	8-719-988-61	DIODE 1SS355TE-17	
D942	8-719-988-61	DIODE 1SS355TE-17	
D943	8-719-988-61	DIODE 1SS355TE-17	
		< TERMINAL >	
EPT101	1-537-770-21	TERMINAL BOARD, GROUND	
		< FERRITE BEAD >	
FB201	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB202	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB205	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB222	1-216-864-11	METAL CHIP 0 5% 1/16W	
FB537	1-500-445-21	FERRITE 0UH	
		< IC >	
IC221	8-749-017-36	IC TORX179	
IC222	8-759-548-57	IC SN74LV00ANSR	
IC501	6-801-336-01	IC uPD703032AYGY-M02-3BA	
IC941	8-759-637-58	IC PST592C-T	

Ref. No.	Part No.	Description				Remarks	Ref. No.	Part No.	Description				Remarks
< JUMPER RESISTOR >							R512	1-247-887-00	CARBON	220K	5%	1/4W	
							R513	1-247-807-31	CARBON	100	5%	1/4W	
JR200	1-216-864-11	METAL CHIP	0	5%	1/16W		R514	1-247-807-31	CARBON	100	5%	1/4W	
JR203	1-216-864-11	METAL CHIP	0	5%	1/16W		R515	1-247-807-31	CARBON	100	5%	1/4W	
JR205	1-216-864-11	METAL CHIP	0	5%	1/16W		R516	1-216-837-11	METAL CHIP	22K	5%	1/16W	
JR208	1-216-864-11	METAL CHIP	0	5%	1/16W								
JR209	1-216-864-11	METAL CHIP	0	5%	1/16W		R517	1-247-807-31	CARBON	100	5%	1/4W	
							R518	1-247-807-31	CARBON	100	5%	1/4W	
JR212	1-216-864-11	METAL CHIP	0	5%	1/16W		R519	1-247-887-00	CARBON	220K	5%	1/4W	
JR213	1-216-864-11	METAL CHIP	0	5%	1/16W		R520	1-249-421-11	CARBON	2.2K	5%	1/4W F	
JR214	1-216-864-11	METAL CHIP	0	5%	1/16W		R521	1-216-833-11	METAL CHIP	10K	5%	1/16W	
JR215	1-216-864-11	METAL CHIP	0	5%	1/16W								
JR217	1-216-864-11	METAL CHIP	0	5%	1/16W		R522	1-216-833-11	METAL CHIP	10K	5%	1/16W	
							R523	1-216-833-11	METAL CHIP	10K	5%	1/16W	
JR219	1-216-864-11	METAL CHIP	0	5%	1/16W		R524	1-216-809-11	METAL CHIP	100	5%	1/16W	
JR225	1-216-864-11	METAL CHIP	0	5%	1/16W		R526	1-247-807-31	CARBON	100	5%	1/4W	
JR226	1-216-864-11	METAL CHIP	0	5%	1/16W		R527	1-247-807-31	CARBON	100	5%	1/4W	
JR227	1-216-864-11	METAL CHIP	0	5%	1/16W								
< COIL >							R528	1-249-429-11	CARBON	10K	5%	1/4W	
							R529	1-247-807-31	CARBON	100	5%	1/4W	
L551	1-216-864-11	METAL CHIP	0	5%	1/16W		R530	1-249-417-11	CARBON	1K	5%	1/4W F	
L552	1-216-864-11	METAL CHIP	0	5%	1/16W		R531	1-249-417-11	CARBON	1K	5%	1/4W F	
							R532	1-249-417-11	CARBON	1K	5%	1/4W F	
< TRANSISTOR >							R533	1-249-417-11	CARBON	1K	5%	1/4W F	
							R535	1-249-429-11	CARBON	10K	5%	1/4W	
Q202	8-729-424-08	TRANSISTOR	UN2111-TX				R536	1-216-851-11	METAL CHIP	330K	5%	1/16W	
Q221	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6				R539	1-249-429-11	CARBON	10K	5%	1/4W	
Q222	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6				R540	1-249-429-11	CARBON	10K	5%	1/4W	
Q223	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6										
Q224	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6				R541	1-249-429-11	CARBON	10K	5%	1/4W	
							R542	1-249-429-11	CARBON	10K	5%	1/4W	
Q232	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6				R543	1-216-809-11	METAL CHIP	100	5%	1/16W	
Q911	8-729-421-22	TRANSISTOR	UN2211-TX				R544	1-216-809-11	METAL CHIP	100	5%	1/16W	
Q912	8-729-040-20	TRANSISTOR	RT1P137L-TP				R545	1-216-821-11	METAL CHIP	1K	5%	1/16W	
Q941	8-729-120-28	TRANSISTOR	2SC1623-T1-L5L6										
< RESISTOR >							R546	1-216-809-11	METAL CHIP	100	5%	1/16W	
							R547	1-216-809-11	METAL CHIP	100	5%	1/16W	
R220	1-216-864-11	METAL CHIP	0	5%	1/16W		R548	1-216-809-11	METAL CHIP	100	5%	1/16W	
					AEP		R549	1-216-809-11	METAL CHIP	100	5%	1/16W	
R221	1-249-413-11	CARBON	470	5%	1/4W F		R550	1-216-809-11	METAL CHIP	100	5%	1/16W	
R222	1-216-809-11	METAL CHIP	100	5%	1/16W		R551	1-249-429-11	CARBON	10K	5%	1/4W	
R224	1-216-853-11	METAL CHIP	470K	5%	1/16W		R554	1-216-809-11	METAL CHIP	100	5%	1/16W	
R225	1-216-841-11	METAL CHIP	47K	5%	1/16W		R556	1-249-421-11	CARBON	2.2K	5%	1/4W F	
							R557	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R226	1-216-853-11	METAL CHIP	470K	5%	1/16W		R558	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R227	1-216-841-11	METAL CHIP	47K	5%	1/16W								
R228	1-216-841-11	METAL CHIP	47K	5%	1/16W		R559	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R236	1-249-429-11	CARBON	10K	5%	1/4W		R560	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R242	1-247-807-31	CARBON	100	5%	1/4W		R561	1-216-821-11	METAL CHIP	1K	5%	1/16W	
							R562	1-216-809-11	METAL CHIP	100	5%	1/16W	
R243	1-216-821-11	METAL CHIP	1K	5%	1/16W		R563	1-216-809-11	METAL CHIP	100	5%	1/16W	
R244	1-216-845-11	METAL CHIP	100K	5%	1/16W								
R245	1-216-845-11	METAL CHIP	100K	5%	1/16W		R564	1-216-809-11	METAL CHIP	100	5%	1/16W	
R292	1-247-807-31	CARBON	100	5%	1/4W		R565	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R501	1-247-807-31	CARBON	100	5%	1/4W		R566	1-216-833-11	METAL CHIP	10K	5%	1/16W	
							R567	1-249-429-11	CARBON	10K	5%	1/4W	
R502	1-247-807-31	CARBON	100	5%	1/4W		R568	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R503	1-216-825-11	METAL CHIP	2.2K	5%	1/16W								
R504	1-247-807-31	CARBON	100	5%	1/4W		R569	1-216-809-11	METAL CHIP	100	5%	1/16W	
R505	1-216-825-11	METAL CHIP	2.2K	5%	1/16W		R570	1-216-809-11	METAL CHIP	100	5%	1/16W	
R506	1-247-807-31	CARBON	100	5%	1/4W		R572	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
							R576	1-216-809-11	METAL CHIP	100	5%	1/16W	
R507	1-247-807-31	CARBON	100	5%	1/4W		R577	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R508	1-247-807-31	CARBON	100	5%	1/4W								
R509	1-216-833-11	METAL CHIP	10K	5%	1/16W								
R510	1-216-833-11	METAL CHIP	10K	5%	1/16W								
R511	1-247-807-31	CARBON	100	5%	1/4W								

UCOM

Ref. No.	Part No.	Description	Remarks		
R578	1-216-821-11	METAL CHIP	1K	5%	1/16W
R579	1-216-821-11	METAL CHIP	1K	5%	1/16W
R580	1-216-833-11	METAL CHIP	10K	5%	1/16W
R581	1-216-833-11	METAL CHIP	10K	5%	1/16W
R583	1-216-833-11	METAL CHIP	10K	5%	1/16W
R584	1-216-833-11	METAL CHIP	10K	5%	1/16W AEP,UK
R585	1-216-833-11	METAL CHIP	10K	5%	1/16W
R586	1-216-833-11	METAL CHIP	10K	5%	1/16W
R587	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R588	1-216-833-11	METAL CHIP	10K	5%	1/16W
R590	1-249-417-11	CARBON	1K	5%	1/4W F
R591	1-249-437-11	CARBON	47K	5%	1/4W
R592	1-216-821-11	METAL CHIP	1K	5%	1/16W
R593	1-216-833-11	METAL CHIP	10K	5%	1/16W
R594	1-216-821-11	METAL CHIP	1K	5%	1/16W
R595	1-249-417-11	CARBON	1K	5%	1/4W F
R596	1-216-821-11	METAL CHIP	1K	5%	1/16W
R597	1-216-809-11	METAL CHIP	100	5%	1/16W
R910	1-260-103-11	CARBON	2.2K	5%	1/2W
R911	1-216-864-11	METAL CHIP	0	5%	1/16W
R921	1-249-409-11	CARBON	220	5%	1/4W F
R941	1-216-817-11	METAL CHIP	470	5%	1/16W
R942	1-216-833-11	METAL CHIP	10K	5%	1/16W
R943	1-216-841-11	METAL CHIP	47K	5%	1/16W
R946	1-216-837-11	METAL CHIP	22K	5%	1/16W
R947	1-216-841-11	METAL CHIP	47K	5%	1/16W
< VIBRATOR >					
X501	1-760-014-31	VIBRATOR, CERAMIC (20MHz)			
X502	1-567-098-41	VIBRATOR, CRYSTAL (32.768Hz)			

Ref. No.	Part No.	Description	Remarks
MISCELLANEOUS			

1	1-757-791-11	WIRE (FLAT TYPE) (16 CORE)	
6	1-773-289-11	WIRE (FLAT TYPE) (29 CORE)	
△ 104	1-769-079-21	CORD, POWER (KR)	
△ 104	1-777-071-21	CORD, POWER (AEP, UK)	
105	1-769-943-11	WIRE (FLAT TYPE) (11 CORE) (KR)	
105	1-773-007-11	WIRE (FLAT TYPE) (15 CORE) (AEP, UK)	
106	1-693-529-51	TUNER (FM/AM) (AEP, UK)	
106	1-693-536-11	TUNER (FM/AM) (KR)	
108	1-773-110-11	WIRE (FLAT TYPE) (19 CORE)	
154	1-773-138-11	WIRE (FLAT TYPE) (19 CORE)	
156	1-823-773-11	WIRE (FLAT TYPE) (23 CORE)	
157	1-823-838-11	WIRE (FLAT TYPE) (27 SORE)	
408	1-682-101-11	PICK-UP FLEXIBLE BOARD	
△ 503	1-758-631-11	OPTICAL BLOCK(CD) (OPTIMA-720L1E)	
759	1-678-514-11	FLEXIBLE BOARD	
△ 760	A-4672-976-A	OPTICAL PICK-UP(MD) KMS-262E/Z-NP	
CN1	1-815-750-11	CONNECTOR	
△ F851	1-532-286-00	FUSE, GLASS TUBE (DIA. 5) (T2.5AL/250V)	(AEP, UK)
△ F851	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) (4A/250V) (KR)	
△ F852	1-532-286-00	FUSE, GLASS TUBE (DIA. 5) (T2.5AL/250V)	(AEP, UK)
△ F852	1-533-471-11	FUSE, GLASS TUBE (DIA. 5) (4A/250V) (KR)	
M701	A-4735-757-A	MOTOR ASSY, SPINDLE	
M702	A-4672-900-A	MOTOR ASSY, SLED	
M901	1-698-997-11	FAN, D.C.	
M902	X-4954-023-1	MOTOR ASSY, LOADING	
M903	X-4954-020-1	MOTOR ASSY, FEED	
M904	X-4954-021-1	MOTOR ASSY, SPINDLE	
M703	A-4672-975-A	MOTOR ASSY, LOADING	
HR901	1-500-695-12	HEAD, OVER LIGHT	
S5	1-786-212-11	SWITCH (DETECTION) (LIMIT IN)	
S102	1-771-957-11	SWITCH, PUSH (2 KEY) (REFRECT/PROTECT)	
△ T900	1-437-239-11	TRANSFORMER, POWER (MAIN) (AEP, UK)	
△ T900	1-437-241-11	TRANSFORMER, POWER (MAIN) (KR)	

ACCESSORIES			

△	1-500-386-21	FILTER, CLAMP (FERRITE CORE)	
	1-770-019-51	ADAPTOR, CONVERSION PLUG (UK)	
	1-823-975-11	CORD, CONNECTION	

The components identified by mark △ or dotted line with mark △ are critical for safety.
Replace only with part number specified.

MEMO

REVISION HISTORY

Clicking the version allows you to jump to the revised page.

Also, clicking the version at the upper right on the revised page allows you to jump to the next revised page.

[illegible]